Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

JUNE, 1959



Power for Memphis - P. 40

6 Ton Hot Reheat Header



Model test set-up of hot reheat line as reproduced above is approximately 1/10th actual size of the model. Circled area shows position of chrome-moly header in the line.

Size of this hot reheat header can be seen by comparison with men in the picture. It is 21" O.D., fabricated of 2¼% chrome, 1% molybdenum steel.

PRETESTED and PREFABRICATED by

Pittsburgh Piping

PART OF A COMPLETE HIGH-PRESSURE, HIGH-TEMPERATURE PIPING SYSTEM

The model shown above exactly duplicates—from an engineering standpoint—a hot reheat line which is part of a high-pressure, high-temperature piping system fabricated by Pittsburgh Piping.

The inset shows the position and relative size of the header in the line, and the main illustration is an actual photograph of this header as fabricated in our shops. The complete system, which includes chrome-moly and stainless steel piping fabrication, is one of scores of installations which we have model-tested, fabricated, and erected.

Use this experience on your next piping job . . . electric generating station, nuclear power installation, chemical processing plant, refinery, mill, or factory. We are specialists with complete facilities, and we assume responsibility for every phase of the work—from blueprint through erection.

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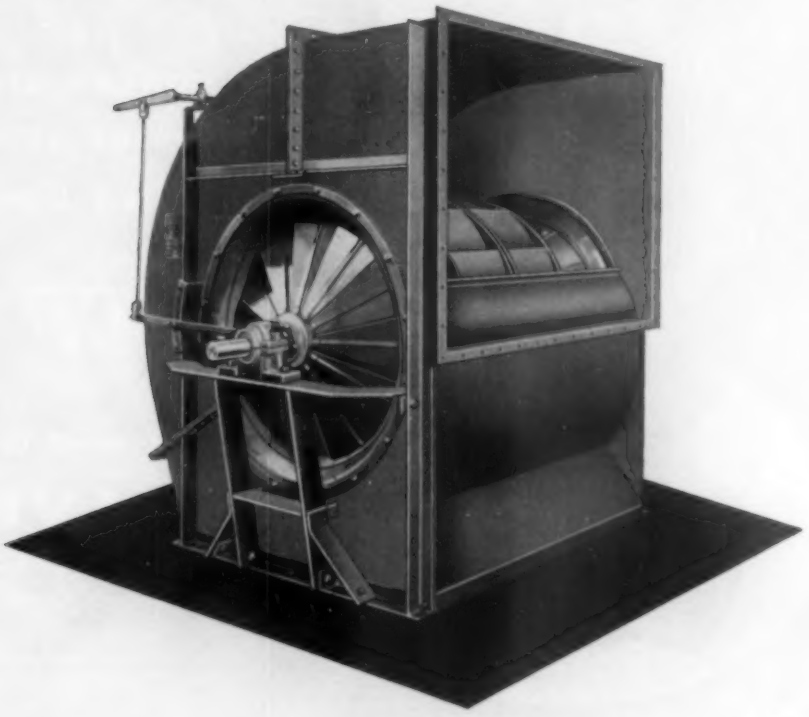
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Volume 77 Number 6

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WRITE FOR CATALOG 859 which provides outlined dimensions and description of new Clarage Type AF Dynafoil Fans. Or contact nearest office.



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Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

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Facts and Trends

June 1, 1959

◆ TEFLON BEARINGS — A new series of spherical bearings, rod end bearings, and bushings using "Teflon" TFE-fluorocarbon fiber has been developed to operate without lubrication and to sell at a price close to their all-metal counterparts.

The bearings utilize the fiber's low coefficient of friction and offer a combination of properties excellently suited to low surface speeds, high unit loads, or high dynamic loading. Field tests in some particularly rugged applications have indicated 10 times the life of conventional bronze or steel-on-steel bearings.

◆ ELECTROLUMINESCENCE — Means of increasing brightness of electroluminescent lamps achieved by Magnetic Amplifiers, Inc. for computer displays makes the new light source more practical and brings home use closer. A newly developed static converter can use d-c battery current or 60 cycle house current as a power source and jack up either of them to the thousand cycle frequency range needed to induce greater brightness in electroluminescent or EL lamps.

◆ NEW FOAM MATERIAL — Silicon Carbide Foam, a new lightweight corrosion-resistant material with high porosity and thermal insulation up to 4000 F, is now in pilot plant production at Carborundum Company's Research Division.

Preliminary studies indicate that this cellular form of silicon carbide overcomes some of the mechanical shock problems common to most hard refractory bodies. Impact loading appears to produce localized crushing without mechanical stress propagation in the main body.

◆ REPRINTS — As a service to its readers, SPI is offering reprints of three important articles that have appeared in recent issues. Write the editors on your company letterhead. No charge for single copies of each:

The Station Chemist's Inspection Reports
Coal Handling Level Controls and Alarms
Paint Systems — Surface Preparation & Coatings.

◆ GAS TURBINES — Ford Motor Co. claims an important breakthrough in gas turbine design for transportation equipment.

Two stages of air compression (one a supercharging stage) enable the engine to deliver more horsepower from a smaller

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MORE MILLIONS OF TROUBLE FREE OPERATIONS

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Allen-Bradley silver alloy contacts never require maintenance. They are always in perfect operating condition . . . and remain so until completely worn away.

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The virtually frictionless, straight line vertical motion provides uniform contact pressure at all times—and assures consistent, rapid operation of the contactor.

• RELIABLE OVERLOAD PROTECTION

All A-B starters are equipped with two permanently accurate and reliable overload relays that protect motors against "burnouts." Three overload relays can be furnished.



BULLETIN 709 STARTERS are made in 9 sizes from Size 0 (at left) up to Size 8.

BULLETIN 709 SIZE 7 with maximum ratings of 300 hp, 220 v; 600 hp, 440-550 v.

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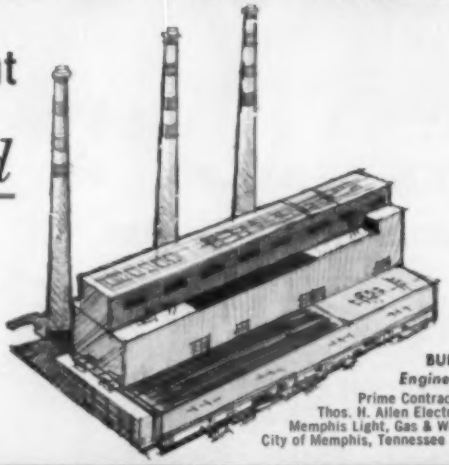
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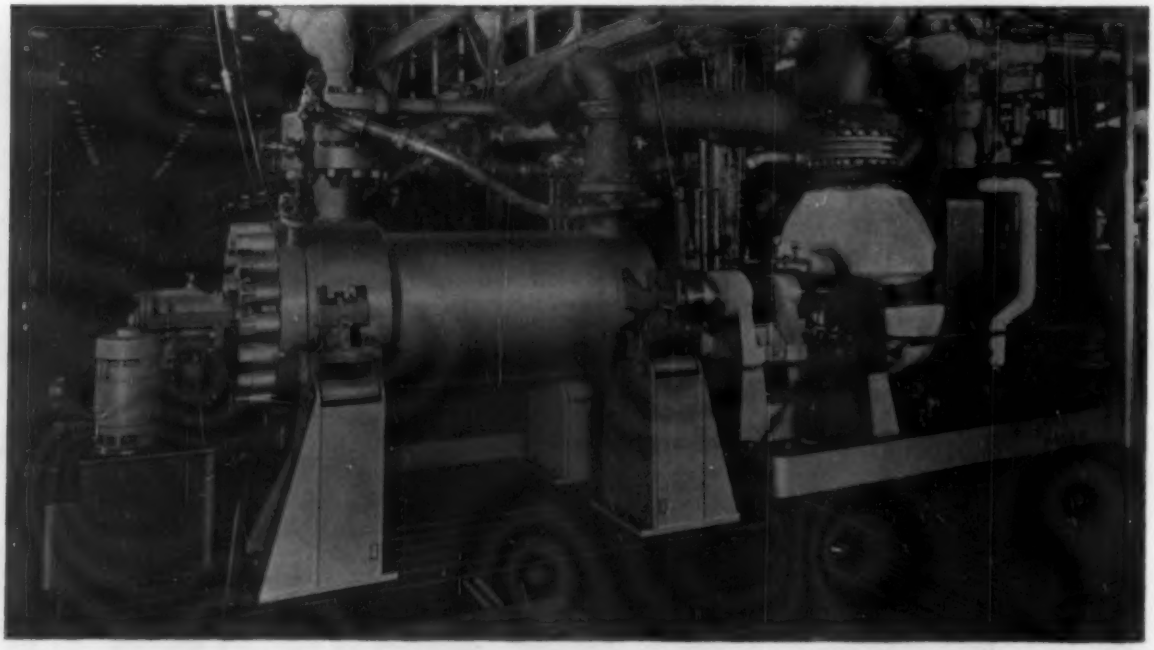
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Performance-proved

in Memphis...



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Engineers and Constructors
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Thos. H. Allen Electric Generating Station,
Memphis Light, Gas & Water Division,
City of Memphis, Tennessee



One of nine City of Memphis 12-stage Pacific boiler feed pumps on performance test in Pacific's especially engineered testing laboratories. All nine pumps were completely tested at Pacific — are now on the line in the Memphis plant...

INSPECTION -- Each and every part of PACIFIC Boiler Feed Pumps is inspected and checked prior to assembly. The finest precision gauges are used to check the accuracy of each part, to insure the proper fit during assembly as well as the proper fit when replacement parts are installed in the field.

HYDROSTATIC TESTS – Each part subject to internal pressure, whether forged or cast, is hydrostatic tested. This includes such parts as the case, heads, jacketed packing housings and bearing housings.

PERFORMANCE TEST – PACIFIC's test laboratories are equipped with calibrated motors and instruments; a variable-speed steam turbine coupled to a torque meter. Closed tanks, vacuum pumps and all other equipment necessary accurately establish the complete performance characteristics of each pump. Test procedure for multi-stage pumps also includes a check of axial thrust.

PACIFIC

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Inc... A Division of Dresser Industries, Inc.
HUNTINGTON PARK, CALIFORNIA
Offices in all Principal Cities

BF-29

Facts and Trends (Continued)

size. High fuel economy at from 25 to 100% load is claimed, and is expected to give better overall economy than conventional engines. The turbine weighs 650 pounds, whereas a comparable conventional truck engine weighs 2700 pounds. A variety of fuels, including light diesel fuel may be used. No warm up is required. The unit is expected to be suitable for any application requiring about 300 hp and good economy over a wide operating range.

◆ MATERIALS HANDLING — The July issue will feature a special 16-page section made up of many short articles telling exactly how difficult handling problems have been solved in specific Southern & Southwestern plants.

◆ GRAPHITE FABRICS — Manufactured graphite is now being produced in flexible fiber and fabric form by National Carbon Co. A new process converts organic textile forms directly to graphite with a purity in excess of 99.9 per cent.

Any yarns, braids, and felts, or fabrics that are woven or knit can be produced in this unique material. In the complex production process a fiber or fabric such as rayon is graphitized by electrically heating it to 5400 F. The crystalline structure of the material is changed to that of graphite similar to other manufactured graphite. Tensile strength of graphite cloth is 10 to 15 pounds per inch width.

◆ DESALTER — Fresh water extracted from the sea at less than 85 cents per 1,000 gallons is made possible by a new type of distillation plant now being marketed by The Griscom-Russell Co. Using design and rating criteria now proved commercially successful and guaranteed, Griscom-Russell reports it can provide the low cost sweet water from plants of about 2,000,000 gallons per day capacity.

◆ PEAKING GAS TURBINES — At Orlando, Florida two gas turbines with a combined capacity of 33,000 kilowatts are in service for peaking purposes. The units are each rated 16,500 kw, and it is from this proven design that General Electric's newest 20,500 kw peaking units were developed.

Soon SPI will present detailed information on how a new gas-turbine is relieving headaches for a Louisiana municipality.

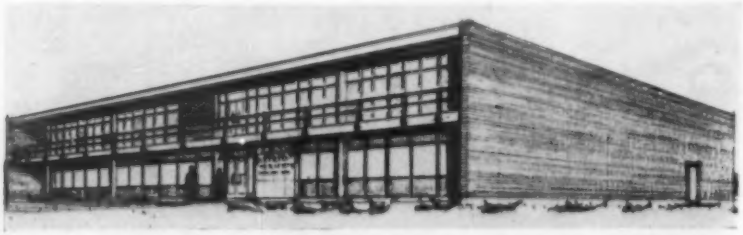
◆ FACTORY-BUILT ROADS, manufactured and laid in Stuttgart, Germany, save four to five weeks' road-construction time, reduce traffic delays and length of detours, according to a recent report in the Armour Research Foundation news letter.

While old surface is being removed and leveled and bitumen-gravel sub-surface bed is being laid, the eight-inch-thick concrete surfacing blocks are being cast at the factory. Dried blocks are taken to the road site, fitted over bed, and covered with asphalt — ready for traffic without a wait for drying.

Write the editors for additional information on any of the above items. SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 8, Ga.

the SOUTH—SOUTHWEST

more power . . . more plants . . . more money



Forest Research Laboratory

The Frederick T. Hoff Construction Company of Gulfport, Mississippi, has received the contract for building a forest research laboratory at Gulfport, the **U. S. Forest Service** has announced.

The two-storied structure will be at 34th and 20th Streets. It will contain modern facilities for research in forest genetics, and into the life histories and controls of insects and diseases that are pests of southern forests and their products. Total floor space will be about 19,000 square feet. The laboratory will be part of the Forest Service research facilities operating in the Midsouth under the U. S. Department of Agriculture.

The building will house the Southern Institute of Forest Genetics, the Forest Insect Laboratory, and the Forest Disease Laboratory. All 3 organizations have been in Gulfport for some time.

Philip A. Briegleb is Director of the Southern Forest Experiment Station in New Orleans.

Work on the building is underway and construction is expected to be completed in the spring of 1960.

Metal Fabrication for Tennessee

A new metal fabricating plant is underway in Lexington, Tenn. for **Lexington Metal Products Company.** The 50,000 sq ft building, which will cost about $500,000, will be leased to the company on a long-term basis.

Completion is expected before the end of the year at which time approximately 200 persons will be employed with more than half male.

Synthetic Resin Plant — Houston

A million dollar plant is underway in Houston, Texas for the production of synthetic resins for **Reichhold Chemicals, Inc.** The plant is scheduled for completion by mid-1959 and will be under the managership of **Don Leever,** division director of technical service at Kansas City.

The new factory will produce a full line of RCI resins, including alkyds, polyesters and emulsions, for use in the paint, aircraft, petroleum, boat and housing industries in the Houston area.

Container Plant Opens in Kans.

Olin Mathieson Chemical Corporation has opened a new corrugated container plant in Kansas City, Kan., replacing its old plant.

The new plant contains a corrugating machine as well as the finishing equipment required to produce corrugated boxes of all sizes, weights, and tests. Production from this corrugating machine quadruples current production levels at Olin Mathieson's former Kansas City container plant.

Douglas Harrod, general manager of Olin Mathieson's Kansas City container operations, stated that the new building is 119,000 square feet in total area and described it as being unique in that it does not have a single column or partition.

Soybean Plant Underway in Va.

A new soybean oil and meal plant under construction at South Norfolk, Va., by **Cargill, Inc.,** Minneapolis, Minn., will use the Rotocel solvent extraction system supplied by the Chemical Plants Division, Blaw-Knox Company, Pittsburgh, Pa.

Cargill's new plant, the first major soybean plant to be erected on the east coast, will have capacity to process seven million bushels of soybeans a year, and will produce edible soybean oil and meal for poultry and livestock. It will be erected adjacent to a grain export elevator the company built two years ago and which is being expanded from two to four million bushels.

Expansion for Continental Can

Continental Can Company has begun construction of new can plants at Pascagoula, Mississippi, and Weslaco, Texas.

The Pascagoula plant, which will supply cans to Gulf Coast packers of shrimp, oysters and cat food, will occupy a 48,600 sq ft building to be built on a site acquired by Continental last year.

The Weslaco plant, serving the fertile Rio Grande Valley, will make cans for citrus, green beans, tomato and pineapple packers. It will be housed in a 46,000 square foot building on an 8.4 acre site.



Steel and masonry are combined here for an attractive plant. This Armco Building has 100-foot clear span width.

For economy and quality specify Armco Steel Buildings

Whether you are planning an office building, warehouse, gatehouse or an entire plant, you can meet your exact needs with an Armco Steel Building. Specify exactly what you need from thousands of sizes of Armco Buildings—each with an unequalled selection of accessories, doors, windows and other special features that give you an economical finished structure tailored for your operations.

You get a high-quality building, too. STEELOX® wall panels lock together to form a tight weatherseal. Heavy-gage walls are up to twice as thick as ordinary steel covering.

Interiors can be insulated and completely finished with standard material. Exteriors take any kind of architectural treatment.

Armco STEELOX construction withstands heavy wind and snow loading . . . lasts indefinitely. There's nothing to warp, crack or burn. Maintenance costs are practically eliminated.

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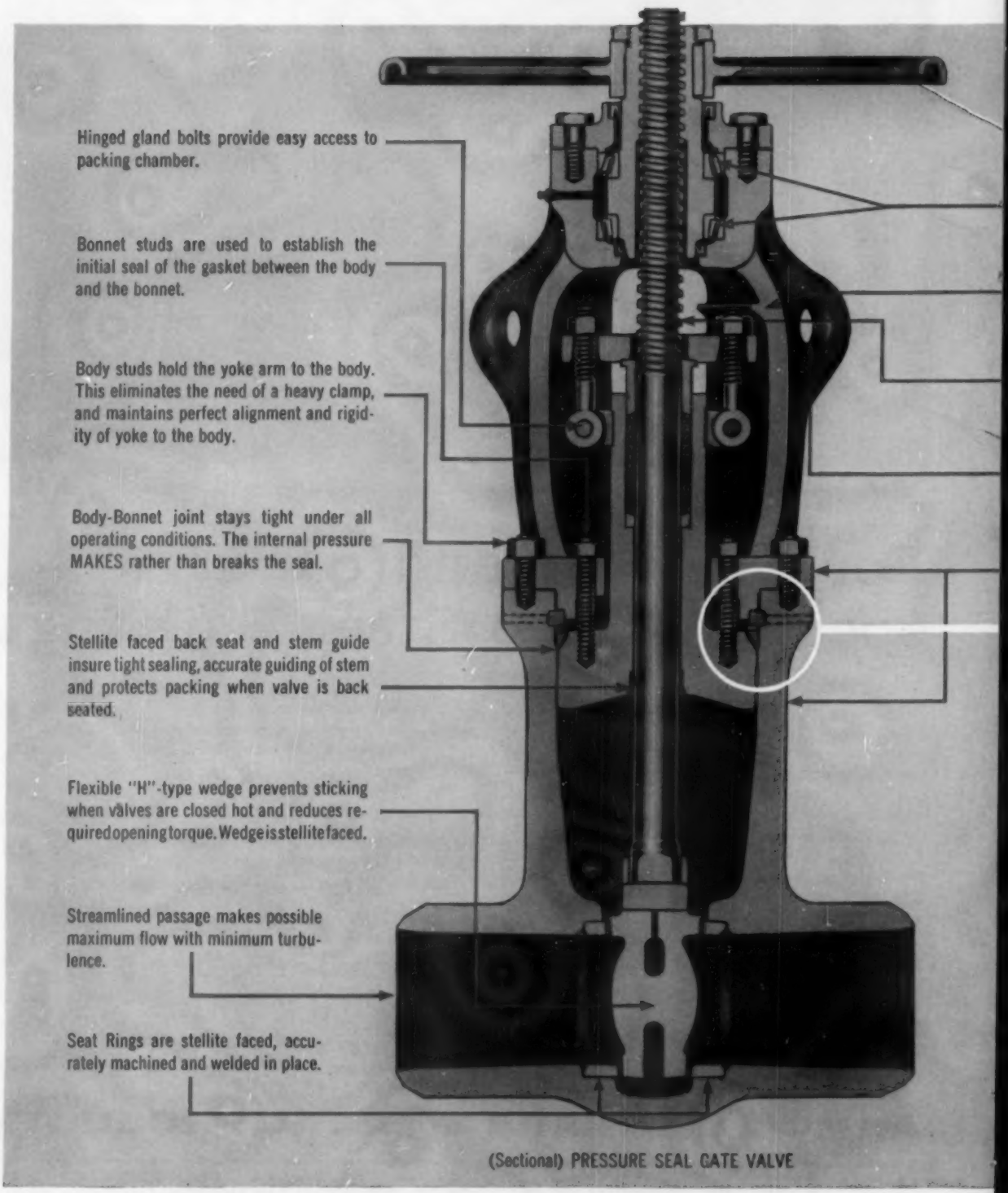
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PRESSURE SEAL VALVES!

Pressure Classes...600, 900, 1500, 2500 Pounds and Higher... ALL COMMERCIAL SIZES



Pressure Seal Gate Valve

Tapered roller bearings are most satisfactory for high thrust loads.

Lugs on the inner side of yoke arms provide a convenient shelf for suspending gland when renewing packing.

Accurately ground stem threads reduce friction and prolong the life of the stem and bushing.

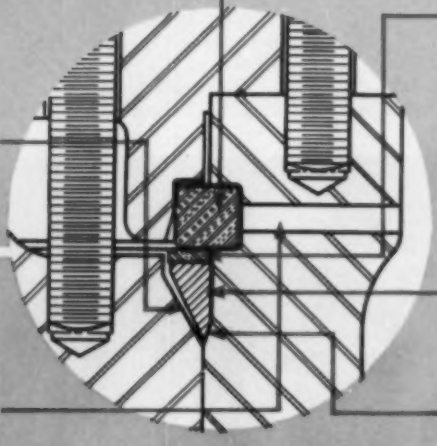
Lifting lugs facilitate handling the valve during erection and maintenance. Also provide means for supporting weight of the valve.

Streamline contour of body simplifies application and reduces cost of insulation, and effects marked savings in space and weight.

Segmental thrust rings absorb all the thrust applied by internal pressure. This design enables valve to be easily assembled and disassembled.

A hardened stainless steel protective ring prevents deformation of the top surface of the soft metallic gasket.

A differential angle between gasket and bonnet assures line contact.



The gasket may be removed without damaging the sealing surface of the body. As the gasket is removed, the sealing surfaces separate freely without damage to gasket seat in body.

By inserting knock-out pin in drilled hole segmental thrust ring can be easily driven out of retaining groove.

The gasket seating surface in the body may be easily lapped, if required — an outstanding feature in Powell Pressure Seal Valve design.

THE WM. POWELL COMPANY • *Dependable Valves Since 1846* • **Cincinnati 22, Ohio**

News of the South-Southwest — more power . . . more plants . . . more money

Silicon Plant Expanding — N. C.

The Du Pont Company is expanding its hyper-pure silicon plant in Brevard, N. C. to provide increased finishing, testing and service facilities. Some 25 new jobs will be created as a result of the expansion which is expected to be completed by late summer.

According to Leslie S. Grogan, Plant Manager, the expansion will include: an area 28′ x 50′ south of the present finishing area to provide expanded finishing facilities; a new wing west of the finishing area to house areas for physical testing, a new shielded enclosure, stock storage and shipping and supervisory offices; and doubling the size of the hyper-clean locker room for employees.

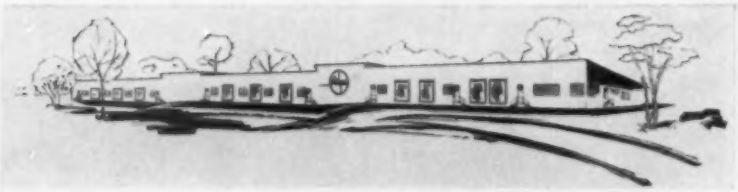
Western Natural Gas Expands in Tex.

Western Natural Gas Company has acquired a refinery located near Brownsville, Texas, formerly operated by McBride Oil & Gas Corporation. The refinery is being rehabilitated and will have an initial capacity of approximately 3,500 barrels per day, making principally asphalt and related products, and kerosene and diesel fuel. This capacity can be increased to 5,000 barrels with a comparatively small capital outlay.

Canco Factory — Atlanta, Ga.

The American Can Company is underway with plans to build a new plant in Atlanta, Ga. to produce beer, soft drink and food cans, as well as composite metal-paper containers.

The new plant, when completed, will have an annual rated capacity of 300 to 400 million containers to supply packers throughout Georgia and parts of Alabama and South Carolina. The new facility containing 150,000 sq ft of floor space, will employ up to 250 people.



Melpar Expands in Virginia

Melpar, Inc., a subsidiary of Westinghouse Air Brake Co. is carrying out a program of coordinated plant expansion that will provide the most advanced technological facilities for the development of electronic equipment. Work will soon be underway on a 120,000 square foot addition to the Falls Church, Va. headquarters plant.

Occupancy of a new 60,000 square foot plant located in the Shirley Industrial area, south of Washington, D. C. was recently completed. This new Melpar Shirley plant houses the "Simulation and Training Systems Engineering Department" and is staffed by approximately 500 employees.

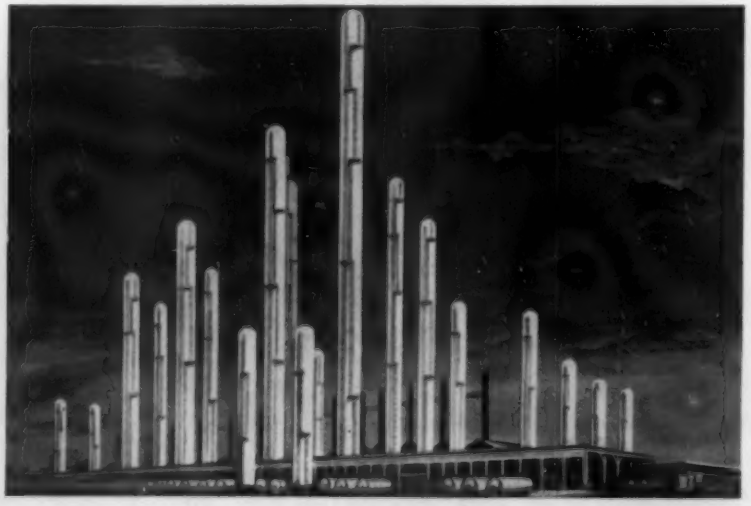
Chemical Plant for Beaumont, Tex.

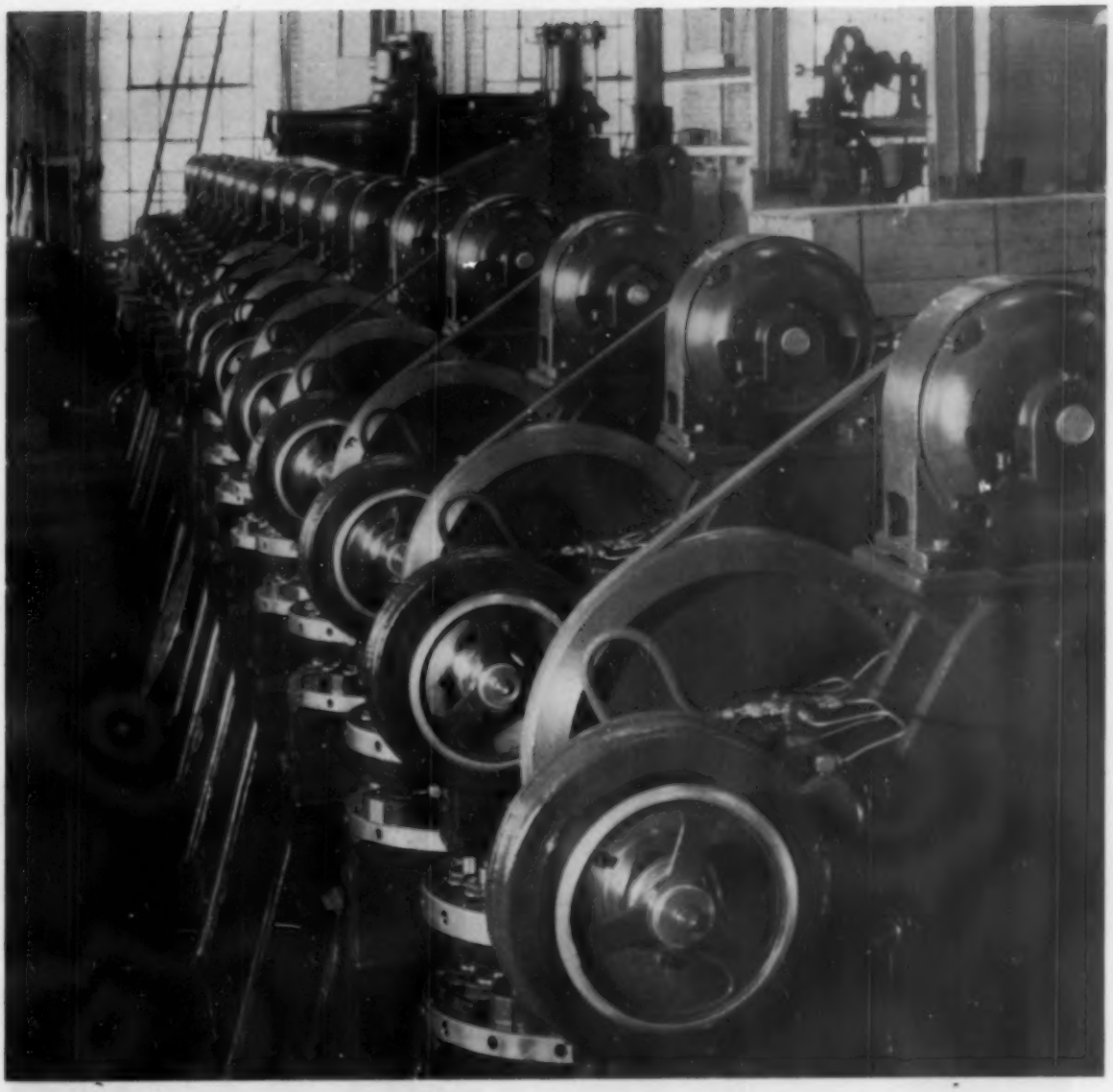
Plans for immediate construction of the world's largest plant for the manufacture of high-purity ethylene have been announced.

The unit will be built and operated in Beaumont, Texas, by **Magnolia Petroleum Co.**, the Mobil Oil Co. for the southwestern United States. The new facility will have an annual capacity of 380,000,000 pounds of high-purity ethylene. It will be built in several stages with the first stage representing an investment of at least $25 million.

General contractor for the plant will be the M. W. Kellogg Company, and operation is scheduled to begin early in 1961.

In addition to ethylene the unit will produce such important chemicals as propylene and butadiene. These three chemical "building blocks" are being used today in increasing volume in a variety of general products which include polyethylene for packaging for consumer goods, permanent type anti-freeze, explosives, acetones, solvents and synthetic rubber.





Higher speeds . . . higher efficiency . . . higher replacement cost

There was a time when a new gear or an odd part for machinery cost little more than the price of a few gallons of lubricating oil . . . but those days are gone forever. Today's power machinery is built for high speeds and higher efficiency. Parts are precision made, and replacements are sometimes prohibitively expensive.

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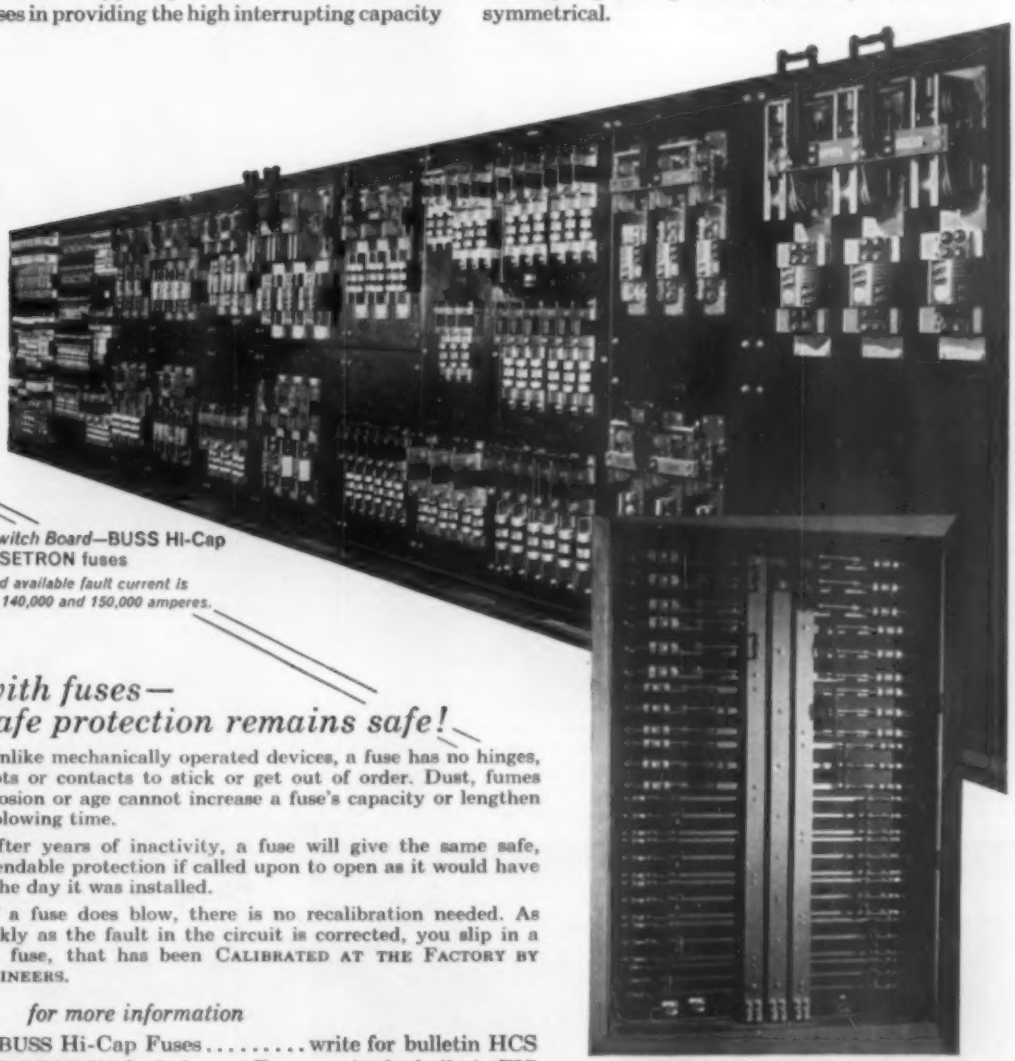
ANOTHER BUSS HI-CAP AND FUSETRON FUSE INSTALLATION

Electrical Protection goes MODERN *with* BUSS Fuses at 485 Lexington Ave., New York, N.Y.

In keeping with the modern trend the electrical protection for this new 30 story office building is BUSS Hi-Cap and FUSETRON dual-element fuses.

No other type of protective device can match fuses in providing the high interrupting capacity and dependability required for today's circuits.

BUSS Hi-Cap fuses have a NEMA interrupting rating of 200,000 amperes rms symmetrical. FUSETRON dual-element fuses have a NEMA interrupting rating of 100,000 amperes rms symmetrical.



Main Switch Board—BUSS HI-Cap *and* FUSETRON fuses

Estimated available fault current is between 140,000 and 150,000 amperes.

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Unlike mechanically operated devices, a fuse has no hinges, pivots or contacts to stick or get out of order. Dust, fumes corrosion or age cannot increase a fuse's capacity or lengthen its blowing time.

After years of inactivity, a fuse will give the same safe, dependable protection if called upon to open as it would have on the day it was installed.

If a fuse does blow, there is no recalibration needed. As quickly as the fault in the circuit is corrected, you slip in a new fuse, that has been CALIBRATED AT THE FACTORY BY ENGINEERS.

for more information

On BUSS Hi-Cap Fuses ..... write for bulletin HCS
On FUSETRON dual-element Fuses..write for bulletin FIS

BUSSMANN MFG. DIV., McGRAW-EDISON CO., ST. LOUIS 7, MO.

News of the South-Southwest — more power . . . more plants . . . more money

Minnesota Mining Alabama Plant

Minnesota Mining & Manufacturing Co. has begun an expansion of its Guin, Ala., reflective products plant, a 45,000 sq ft addition. The new facilities are expected to be in operation by early 1960.

According to W. C. Bohn, plant manager, between 30 and 40 workers will be added to the payroll when the new facilities reach full production. The plant presently employs about 100 people. The M. H. Rowell Construction Co. of Guin will be general contractor.

Snack Plant — Washington, D. C.

H. W. Lay & Company, Inc. is laying plans to build a new $900,000 plant in the Washington, D. C., area which will serve the District of Columbia, Maryland and Virginia.

The plant, containing approximately 50,000 square feet of space, will be constructed on a four-acre site in the Eastgate Industrial Center at Bladensburg Road and Eastern Avenue in Prince Georges County, Maryland — a Washington suburb. It will replace the company's present facilities at 4860 Bethesda Avenue, Bethesda, Maryland. Construction is scheduled to start in August with completion and start of operations set for June, 1960.

The plant, which will employ approximately 125 persons including members of Lay's sales staff, will have a designed production capacity of 160,000 pounds of finished potato chips a week and 130,000 pounds of "Fritos" corn chips a week.

Harold R. Lilley, of Washington, vice president and director of Lay's, will be in charge of operations at the new plant.

Wakefield Plant for Oklahoma City

Nearing completion is the southwestern plant of **The Wakefield Co.** of Vermillion, Ohio, manufacturers industrial and commercial lighting equipment at Oklahoma City, Okla. The plant will be located in the Willow Springs Industrial District and initially will have 6,000 square feet of floor space, employing 25 people. It is planned to expand the plant as the Southwestern market grows — up to 25,000 square feet and employing about 100 people.

General Manager of the Oklahoma plant will be **Joseph E. Comer,** Vice President of the Wakefield Southwest Company. Mr. Comer will be in charge of all southwestern operations and has been with the parent company since 1956. He will be assisted by Blair Perkins, Sales Engineer. Both Comer and Perkins are natives of Oklahoma.

The Southwest plant of Wakefield will assemble and distribute the company's line which includes luminous ceilings and the multi-purpose ceilings. The company's high-frequency lighting system is included.

The plant is being constructed by Oklahoma Industries, Inc. on a long term lease basis. Provisions have been made by Oklahoma Industries, Inc. to expand the plant as required by Wakefield.

$7 Million Mfg. Plant — Atlanta

Ground has been broken by **Crown Cork & Seal Co., Inc.,** Philadelphia, Pennsylvania, for the construction of a $7 million can and crown manufacturing plant in Atlanta, Georgia.

The initial section of the new plant would be an approximate 250,000 square feet, one-story steel and masonry structure on a 40-acre tract. Manufacturing facilities will use 225,000 square feet of the new plant space. The remainder will be devoted to completely air conditioned administrative offices, cafeteria, engineering and technical services departments. Completion of the plant is expected in the fourth quarter of this year.



USI Polyethylene Plant — Houston

The new **U. S. Industrial Chemicals Co.** polyethylene plant at Houston, Texas, has just started production and is already shipping in commercial quantities.

According to Dr. Robert E. Hulse, executive vice president of National Distillers and Chemical Corp. and general manager of its U. S. Industrial Chemicals Co. Division, the new Houston plant will soon be producing the company's Petrothene polyethylene resins at a rate of 75 million pounds annually. At the same time U.S.I. is undertaking a major expansion to double the plant's capacity by the third quarter of 1960.

Uranium Dioxide Plant for Spencer

Construction is underway on a plant to process uranium dioxide for nuclear fuel use by **Spencer Chemical Company.** The new plant is being erected at the company's Jayhawk Works near Pittsburg, Kansas, and will be able to process approximately 50 tons of uranium dioxide a year. Completion is estimated for mid-summer.

Problem: SOUTHERN INDUSTRY NEEDED READILY AVAILABLE SOURCES OF MILL PRODUCTS & BUILDING ITEMS









Solution:

A FEW YEARS back the management and the name of the old Southern States Iron Roofing Company were changed. Under the guidance and sponsorship of Reynolds Metals Co., the parent company, new and reliable suppliers were contacted. Inventories in ten huge warehouses were increased, better organized. Adequate stocks of brass, copper, stainless and carbon steel, and Reynolds Aluminum mill products were put in each warehouse. In all, over half a million square feet of industrial products were put in inventory.

NEW EQUIPMENT was bought to handle the flow of industrial products in and out of the warehouses. Modern materials handling equipment unloads and loads from trucks and trains, moves materials to slitters, metal saws, shears, decoilers and other metal working equipment. Overhead cranes rapidly handle bundles of sheets, industrial building products and other items carefully stocked in our ten acres of warehouse floor space.

140 REPRESENTATIVES working out of ten major warehouses were trained to cover the entire Southeast to service the requirements of industrial metal users. These competent product specialists form an unmatched chain that extends from Richmond to Birmingham, from Memphis to Miami, to work on the specific details, quotations, and delivery schedules you need. Behind these men, product managers and general office personnel coordinate the inventories and order handling from branch to branch.

ON-TIME DELIVERIES were planned and executed by maintaining a fleet of company trucks to make deliveries to customers. A system of immediate order handling to expedite office-to-warehouse orders was installed.

Through the establishment of adequate industrial metals stocks from reliable suppliers, the addition of materials handling fabrication equipment, the employment of competent service representatives and the use of company trucks, Reynolds Aluminum Supply Company solves customers' metals problems. Call in your RASCO man. He may well solve your problems of today and contribute to your profit picture of tomorrow.



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INDUSTRIAL BUILDING PRODUCTS
STEEL FLAT SHEETS
BRASS & COPPER
STAINLESS STEEL

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New Stylux not only eliminates window breakage and cuts artificial lighting bills—it also lowers the overall cost of changing over to daylighting panels.

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Secondly, new Stylux comes in a larger, money-saving 51-inch size that is a 4-foot coverage section. Depending upon the job, this larger size means considerable savings in time, labor and fastening costs. You get this plus at no increase in price!

Stylux comes in all standard panel and window pane sizes, is easily installed. All types of corrugations and flat panels. Shatterproof, non-corrosive, flame-retardent grades of Stylux bear both Underwriters' Laboratories and Factory Mutual labels.

Enjoy the savings and protection of skylighting panels; insist upon the better quality, the greater economy of Stylux. For full-color literature and specification data, for the name of your nearest Stylux Dealer, write us at the address below.

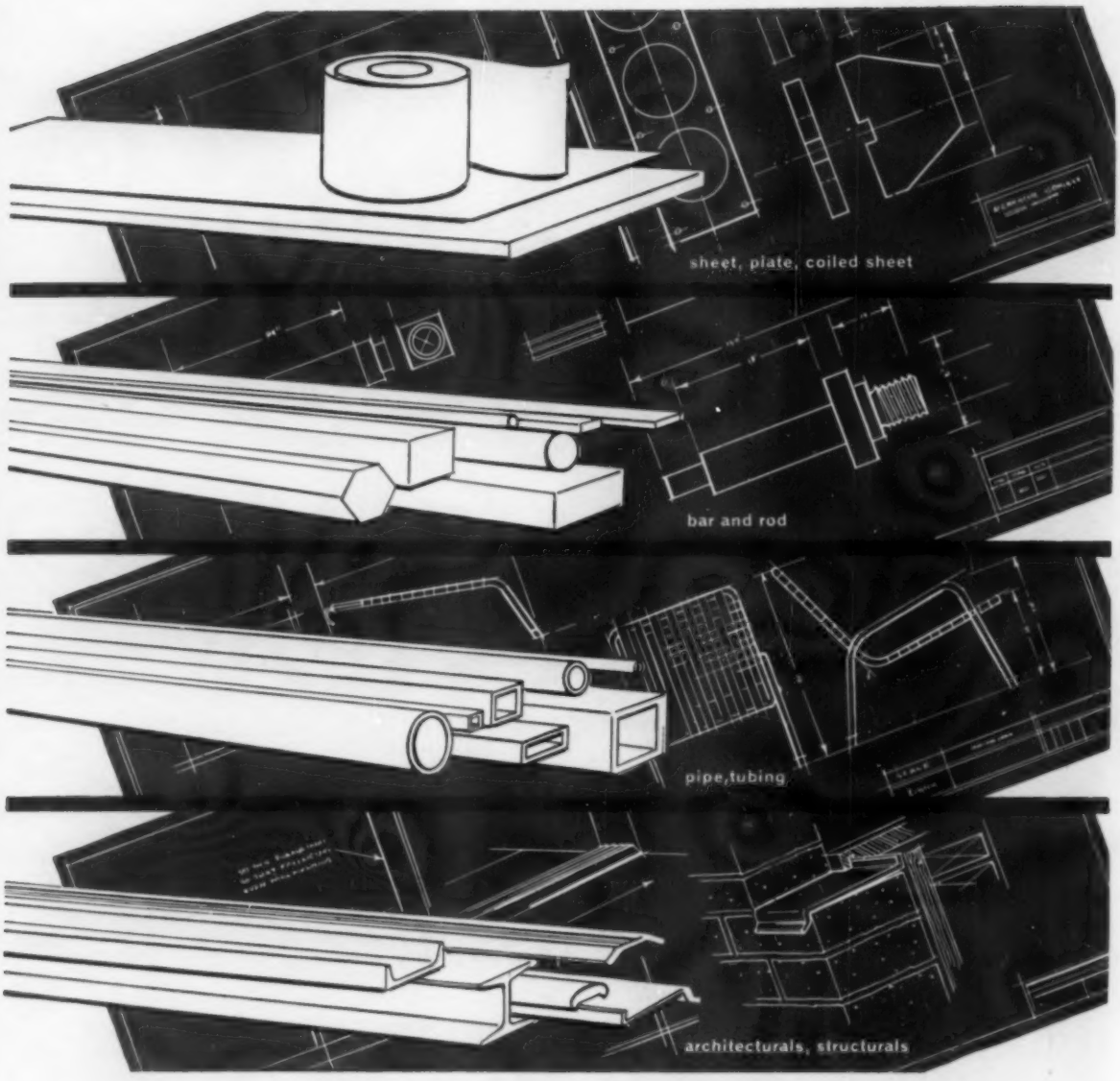
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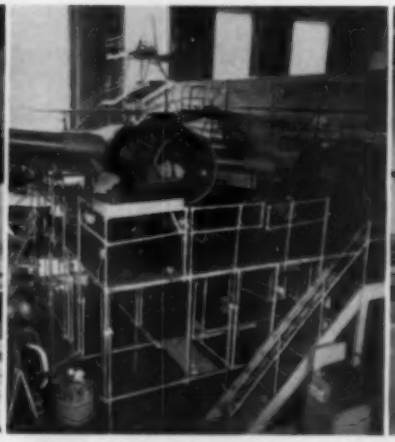




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Fittings are made to slip on I.P.S. standard pipe or tube in sizes up to 2". No threading or welding is required; fittings are held in place by knurled-point, hardened set-screws.

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You can now have an experienced Westinghouse Maintenance Engineer—with a fully equipped service truck—in your plant, working for you. Behind him he has the complete resources, research, engineering, man power and facilities of Westinghouse. Yet your cost is less than the relative cost of lubricating your car—less than 1 percent of the value of your equipment.

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News of the South-Southwest — more power . . . more plants . . . more money

Humble Gas Plant Underway in Texas

Humble Oil & Refining Company has awarded the contract for the design and construction of its King Ranch Gas Plant to Hudson Engineering Corporation of Houston, Texas.

The processing and cycling plant will be located in Kleberg County, Texas, approximately fourteen miles southwest of Kingsville. The plant will be capable of recovering approximately 28,000 barrels per day of liquid products when processing 800 million cubic feet per day of gas.

Field construction is underway and the plant is expected to be completed entirely by the end of 1960, although a portion will be in operation by the end of 1959. This is the last major phase to be initiated of Humble's $70 million Southwest Texas area gas project that includes gas gathering lines extending into a number of oil and gas fields in the area, the main gas processing and cycling plant, and the 238 mile 30-inch gas pipeline extending from the plant to the Houston area.

Kiekhaefer Branch Underway in Fla.

The Kiekhaefer Corporation of Fond du Lac, Wisconsin, manufacturers of Mercury outboard motors, has begun construction of a new facility in Sarasota, Florida with an initial investment of $750,000 in the building and motor and parts inventories.

The new construction signals the establishment of the outboard motor industry's first sales and service factory branch in the State of Florida. The building will include offices, warehousing space for new motors, parts and accessory stocks and a service school and sales training school.

The new branch operation will be located at the Sarasota-Bradenton Airport. A portion of the building will be devoted to a hangar for use by the company's aircraft division, allowing the airplanes landing at the airport with supplies, motors and personnel to taxi virtually into the offices.



$1.5 Million Rubber Plant — Miss.

Selection of a 34-acre site in north Tupelo, Miss. for the construction of a $1,500,000 tire manufacturing plant has been announced by **Pennsylvania Tire Company**, Mansfield, Ohio.

Building plans are already drawn and construction work will start promptly, with the time schedule calling for the beginning of production operations in early fall.

The building's design calls for initial production at the rate of 1,500 tires per day with provision made in plant lay-out for expansion to a daily capacity of 5,000 tires. Approximately 125 workers will be employed for initial production. All will be local labor except for some key supervisory positions.

The new plant will contain 100,000 feet of floor space in a building 200 by 500 feet.

Carbide Expands Seadrift Plant

Union Carbide Chemicals Company, division of Union Carbide Corporation, has announced that it will build two new units at its Seadrift, Texas plant to produce esters and alcohols. The combined capacity of the two units will exceed 100 million pounds. Design work is now in progress on both projects, and completion dates are set for some time in 1960.

These units represent an expansion in capacity for manufacture of these materials which are now produced by Carbide at other plant locations. They also represent a broadening of the line of products from the Seadrift plant which previously was confined to the manufacture of ethylene oxide, glycols, and polyethylene.

Glass Plant for Tampa

A multi-million dollar glass container manufacturing plant will be erected on a 30 acre tract at Tampa, Fla. by the **Thatcher Glass Manufacturing Company, Inc.**

Production is anticipated by late summer or early fall.

The plant, serving the entire Southeast, will employ 160 persons in the first phase of its operation and will manufacture glass containers for the Schlitz and Budweiser breweries in Tampa.

The next phase will add another 100 employees and will include the manufacture of clear glass containers.

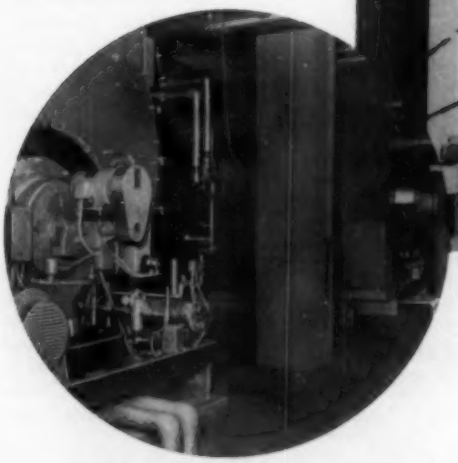
$1 Million Research Center for Glidden

The Glidden Company has announced that it will build a $1 million inorganic chemical research and development center in Baltimore, Md.

The center will be on the site of the company's Adrian Joyce Works which produces titanium dioxide. The new facility will consolidate inorganic chemical research, product development, and technical service activities for the Chemicals-Pigments-Metals Division. The research center will be equipped to develop new pigments for use by paper makers.

Where the *steam* comes from





Complete firing system in one package. Every factor that affects firing efficiency is engineered into the unit at the factory. The unit includes: (1) Single or dual-fuel burner, with complete fuel handling systems. (2) Forced draft air supply. (3) Enclosed control panel, with instruments mounted, factory wired and tested, and with signal lights and gauges that afford a complete reading at a glance. In the oil-gas units, fuels can be switched automatically, or with the simple flick of a switch.

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Fire low cost residual oils

The heavy residual fuel oils (No. 5 and 6) have higher heat value than light heating oils, yet cost less per gallon.

The Iron Fireman boiler-burner units shown here fire these sluggish oils with complete dependability. They protect against fuel emergencies because they can fire *any* grade of oil, light or heavy.

Gas or oil—switch fuels instantly

Dual-fuel models fire either gas or oil, and can be switched either by manual or automatic controls. In some areas gas rates are substantially less for customers whose steam plants switch automatically from gas to oil firing when outdoor temperature falls below a certain level, relieving the load on main gas lines when demand is highest.

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Iron Fireman residual oil firing (with or without gas) is available in complete boiler-burner units ready for service connections, or as a package firing system that can be applied to any type of boiler.

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For more information, use Reply Card—Page 87

News of the South-Southwest — more power . . . more plants . . . more money



McPhran Plastics Plant

Production is underway in Georgia's newest plastics plant — the **McPhran Corporation,** located in the Cobb-Marietta Industrial Park at Marietta — on the manufacture of fiberglass reinforced plastic building panels, Decor-Flex.

The president, and the developer of the process by which Decor-Flex is made, is Dennard I. McCool, a graduate of Georgia Tech and a former instructor at Southern Technical Institute.

The plant itself is automated, using the most modern production methods. A laboratory is also maintained for research and development of fiberglass and plastic products.

Decor-Flex will be widely distributed through building materials wholesalers and distributors. It is being produced in a variety of decorative colors and designs to provide wide design and functional appeal.

Ford Motor Expansion

A major expansion of storage facilities at **Ford Division's** Kansas City assembly plant in Claycomo, Mo. is underway according to Tjark F. Riddle, plant manager.

Construction of the 103,000 additional square feet of warehousing space will be completed in August. The contract for the expansion program has been awarded to the H. F. Campbell Construction Company of Detroit.

The expansion will include a 36,000 square foot extension to the southeast section of the main assembly building and a separate 67,000 square foot warehouse immediately south of the plant's truck unloading docks.

The plant expansion will comprise an area measuring 120 feet long and 300 feet wide. This area, which until now has served as a part of the plant's outside storage facilities, will be enclosed and constructed with the same outside aluminum siding used in the main assembly building.

Aluminum siding also will be used in constructing the new one-story warehouse, which will be 240 feet wide and 280 feet long. The warehouse will include trackage which will accommodate five freight cars within the facility and two truck unloading docks.

$2 Million Milk Processing Plant

The Borden Company has broken ground in Tampa, Fla. for the largest and most modern combined milk and ice cream plant ever built in the South.

Covering 100,000 sq ft, the new plant, costing an estimated $2 million to build and equip, will be located on a 15 acre site. The potential capacity of the milk processing department will be 400,000 quarts per day, and the capacity for ice cream production will be three million gallons annually. The plant will bottle milk for the Tampa Bay area and surrounding communities.

Division Headquarters for the Borden Company will be located in the new Tampa plant, distribution operation for milk and ice cream products to 40 locations in Florida, Georgia and Alabama. Combined division and plant operating personnel will number more than 300.

The new milk and ice cream plant operation will be under the supervision of **George Harlan,** present manager of Borden's Tampa plant.

Construction is expected to be completed early in 1960. Architects for the new plant are Pullara, Bowen and Watson.

Chesapeake Expansion

A program of improvement and expansion estimated to cost more than $3,000,000 will be carried out in 1959-1960 at **The Chesapeake Corporation,** of West Point, Virginia.

According to Steve G. Olsson, president and general manager, the program consists of: a 45,000 sq ft warehouse, which is nearing completion and is designed to store 10,000 tons of kraft paper and paperboard products; installation of a 12,500-kilowatt turbine generator with work expected to be completed in August, 1960; increasing the capacity of the pulp mill and the quality of pulp — by rebuilding eight of the digesters with completion scheduled later this year; and addition of specialized equipment to improve the quality of pulp with completion expected by late summer.

Eastman Expands in Dallas, Tex.

A 40,000 square foot addition to present distribution facilities is under construction at **Eastman Kodak Co.'s** Southwestern sales division headquarters in Dallas, Texas.

The one-story structure will add 70 per cent more warehouse area to the regional headquarters at 6300 Cedar Springs Road.

The general manager of the Southwestern sales division is James Z. Bessellieu.

The addition, which is scheduled for completion by August 1, is part of the company's continuing program of capital improvement.



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Here's a steam trap



..and for seven sound reasons:

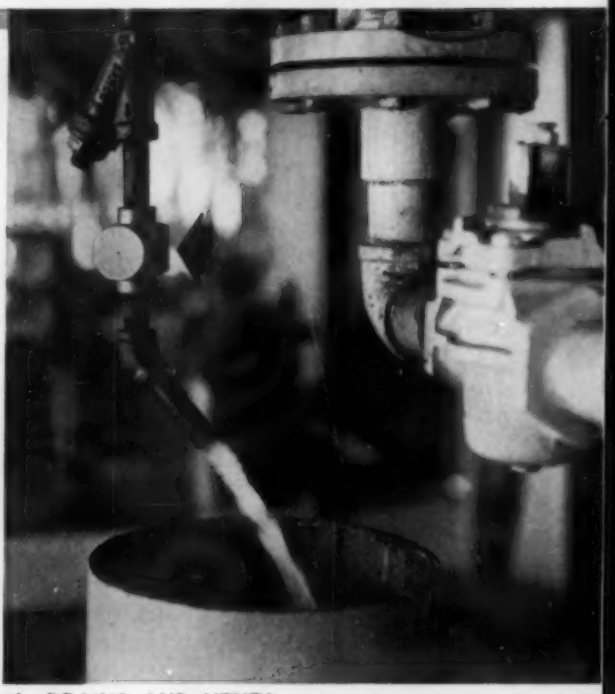
1. *Simplicity* – only one moving part.

2. *Maintenance* – practically zero. 3. *One trap* for all pressures from 10 to 600 psi.

4. *Uniform performance* – operates equally well on heavy, light, or no condensate load.

5. Operates against *back pressures* up to 50% of inlet pressure. 6. *Rugged* – unaffected by superheat, water hammer, vibration, or corrosive condensate. 7. *Minimizes inventory* of spare parts.

Sarco TD's on outdoor blending tanks of Shell Oil Company, Sewaren, New Jersey, are installed vertically, instead of in the usual horizontal position, in order to drain coils after shut-down, thus preventing freezing.



1. DRAINS AND VENTS

at start-up. Immediately rids lines of condensate and air to permit normal operation. This eliminates the need for manual opening of valves to drain the system.

CONTROL COSTS

In these days of sharp emphasis on cost control, Sarco Thermo-Dynamic TD Traps are helping plants to deliver the full productive power of every pound of steam. And because the TD has no mechanism . . . no gaskets . . . no narrow channels to clog, maintenance cost on the TD is almost nil. As one plant engineer puts it: "This TD is a cinch to install, it's no bigger than a tee fitting, and it works in any position. The TD is the one steam trap we can install and forget."

CHOOSE THE RIGHT TRAP

There's an infinite variety of applications, temperatures, pressures and loads in industrial steam piping. Sarco can help you select the right trap for every job of air and condensate removal, saving you money and down-time.

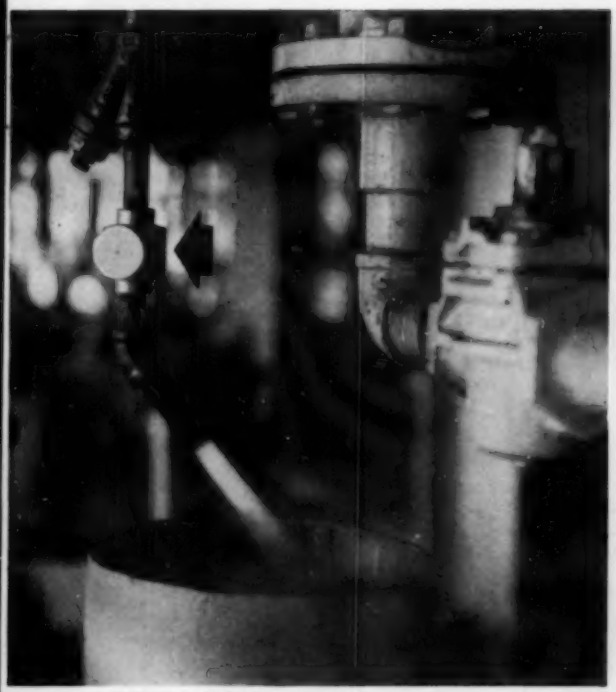
HOW ABOUT THE BUCKET TRAP?

With the development of the patented* Sarco Thermo-Dynamic Steam Trap, the bucket trap suddenly aged 50 years. In a nostalgic way we feel somewhat sorry, because *our* Sarco bucket trap has made us thousands of friends. But frankly, it's no match for the new Sarco TD. Progress is progress.

Some of our customers who are getting satisfactory service from our bucket traps may prefer to replace their old Sarco bucket traps with *new* Sarco bucket traps. If you feel this way, we're flattered enough to keep on making Sarco Bucket Traps – strong, sturdy and durable as ever. Let us suggest, however, that you at least give the new Sarco Thermo-Dynamic Steam Trap a try, under your most exacting conditions.

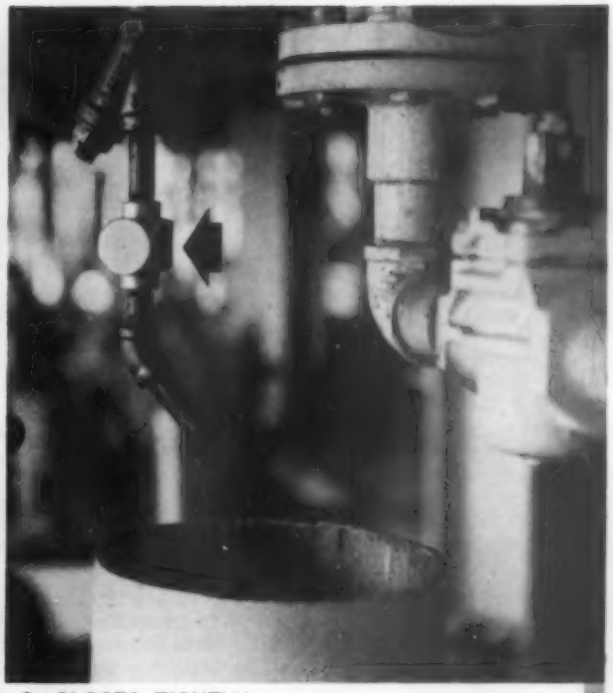
*U.S. Pat. No. 2,817,353 T. M. Reg. U. S. Pat. Off.

that does what a steam trap should



2. DISCHARGES

air and condensate at steam temperature as rapidly as they collect. Does not wait for a bucket of steam to leak through a small orifice.



3. CLOSES TIGHTLY

There is no continuous bleed; nor is there loss of buckets of steam as in the bucket trap which must discharge steam with each cycle.

MAINTENANCE TIME: 40 SECONDS!



How long does it take your maintenance crew to service an ordinary trap? If it's over a couple of minutes, you're throwing away valuable time. The Sarco TD can be cleaned, blown out, if necessary, and reassembled on the line, in as little as 40 seconds. 6345-B

Sarco can give you impartial advice on trap selection because Sarco makes All–5 Types:
Thermo-Dynamic . . . Thermostatic . . . Liquid Expansion . . . Float Thermostatic . . . Camlift Bucket

SARCO COMPANY, INC. 635 Madison Avenue, New York 22, N. Y.

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES

Rubber Plant for Pa. Tire in Texas

Construction of a new industrial plant for the manufacture of tread rubber in Paris, Texas, is underway by **Pennsylvania Tire Company**, Mansfield, Ohio.

The plant, a half-million dollar installation on a 30 acre tract, will initially provide production at the rate of 750,000 pounds of tread rubber per month. The plant's design makes provision for future expansion and into additional lines, including the possible manufacture of passenger car and truck tires.

The building contract has been awarded to the M. D. Misso Construction Company of Paris and July 1 has been set as the target date for completion, and the beginning of production operations in the 25,600 sq ft plant.

PLANT PERSONNEL

Engineering-Management Promotions Announced by Major Southern Plants

Diamond Alkali Co. has announced the following personnel changes at its Dallas, Tex. plant: **Hanson Roberts** promoted to Plant Manager, upon the retirement of Harry S. Crary; and **Billy J. Miller** named as Plant Superintendent.

Paul D. Orleman named to administrate the construction of Bestwall Gypsum Co.'s new plant at Brunswick, Ga.

Appointed manager of the Humboldt, Tenn., container plant of Alton Box Board Co. is **Clarke D. Thornton.**

Fred Nunnally has been appointed material processing engineer of Llewellyn Machinery Co. in Miami, Fla.

J. W. Grooms of Greensboro, N. C. has been named assistant manager of the recently purchased plant of Knoxville Fertilizer Co.'s Nashville, Tenn. plant by American Agricultural Chemical Co.

Multronics, Inc. of Sarasota, Ky. has appointed **Milton A. Chambers** chief engineer and **George P. Howard** assistant engineer.

Clarence E. Archer has been promoted to the managership of Appalachian Power Co.'s Clinch River Plant at Carbo, Va.

Named general manager of E'town Time Corp. of Elizabethtown, Ky. is **Frank Koziell.**

William A. Keiss, Jr. is now general manager of the Chattanooga, Tenn. paper mill of Container Corp. of America.

Girdler Catalysts of Louisville, Ky. has named **Dr. J. Earl Taylor** as manager of research and development, succeeding **Dr. John N. Pattison** who will take charge of a new long-range research program.

Joseph Rinker has been named District Supervisor of the Cocoa and Cape Canaveral plants of Rinker Materials Corp. He will also act as manager of the Cocoa plant while **Ralph Dunning** will serve as manager of the Canaveral division.

Promoted to plant superintendent of the Cabinet Div. of Magnavox Co. at Greeneville, Tenn. is **Dan K. Seneker.**

Fred L. Rushing has been promoted to assistant general manager of the Florida division of Gaylord Container Div. of Crown Zellerbach, Inc.

Newcomb Spring Corp. has promoted **Chas. R. Porter** to General Manager of its newest plant in Atlanta, Ga.

P. G. Carpenter has been named Acting General Manager of the Baton Rouge, La. plant of Copolymer Rubber & Chemical Corp. **R. F. Schultz** has joined the company as Director of Research & Development, filling the position vacated by Dr. Carpenter.

Kaiser Aluminum — Coke Calcining in Mississippi

Kaiser Aluminum & Chemical Corporation has announced that it will construct a plant near Purvis, Mississippi, for calcining petroleum coke. The coke is used in the manufacture of carbon anodes for the electrolytic cells in the company's primary aluminum reduction plants.

Kaiser Aluminum is acquiring a 20-acre site adjacent to the Purvis refinery of Pontiac Eastern Corporation, which will supply the petroleum coke, a by-product of the oil refining process, as the raw material. Construction is scheduled to begin in the near future, and will include installation of a rotary kiln and related handling facilities, with a capacity for calcining approximately 70,000 tons of coke per year.

The plant will begin operations in late summer and have a work force of about 15 employees. Investment in the plant will total about $500,000.

Oklahoma City Expansion for Unit Parts Co.

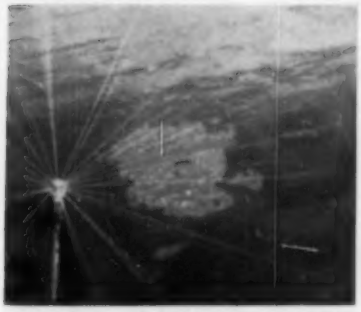
Construction of a major plant facility for the **Unit Parts Company** of Oklahoma City, Okla. is getting underway. The plant will be located on Southeast 59th in the Tinker Industrial area.

The Unit Parts Company produces exchange automotive parts. Current monthly production of the company is approximately 118,000 units, which are distributed over a 28-state territory. Unit Parts is the largest full line rebuilder in the country.

The plant will be of modern 1-story, industrial design containing 109,000 square feet. Complete facilities with the exception of machinery will be constructed by Oklahoma Industries, Inc.

This new plant unit will provide for substantial expansion of the organization including the production line and the 220 employees which now comprise the work force.





An April Showers' double deck spray head in action. West Virginia Pulp & Paper Company's New Orleans plant (top photo) is one of hundreds throughout the South-Southwest cooled by automatically controlled April Showers—Southern roof cooling systems.

automatically controlled

ROOF COOLING

by APRIL SHOWERS—SOUTHERN

BEFORE YOU BUY air conditioning (or if you don't) be sure to investigate automatically controlled ROOF COOLING by April Showers—Southern.

Millions of feet of April Showers' automatic roof spray systems are thoroughly plant-tested in the South-Southwest — cooling "under-roof" areas 8° to 15° . . . reducing loads of air conditioning systems as much as 25% . . . and adding life to built-up roofing materials.

Here are some of the many reasons why hundreds of Southern Companies have installed April Showers on their new and old buildings:

- Roof temperature never exceeds 8 to 10 degrees above existing wet bulb — in the South that means a roof is held at 90 to 95 F. Without April Showers, it would reach 150 - 160 F.
- Roof life is doubled — April Showers prevents quick temperature change shocks to built-up roofing, eliminating expansion, contraction, and volatilization of water-proofing compounds.
- Fire hazards are reduced and roof dust controlled. Built-in manual by-pass permits spray operation at any time.
- Inexpensive to purchase and operate — thermostatically controlled with no pools, no run-off.
- Applicable to any design or type of roof.

For information and free estimates call:

APRIL SHOWERS—SOUTHERN
Reube O. Emery, Regional Director, Third National Bank Bldg., Nashville 3, Tenn. — ALpine 5-8531

ATLANTA — William F. Applegarth, 1011 Marietta St., N.W. — TR 5-7751

BIRMINGHAM — Brownlee-Morrow Engineering Co., Box 3081 — LYric 2-8143

JACKSON, MISS. — Robert Porter, 414 S. State — FL 5-0061

KNOXVILLE — Joe Bailey, Mechanical Equipment Co., 718 Market, S.W. — 4-1169

LITTLE ROCK — Ross S. Woodbury, Mgr., T. J. O'Brien Engineering Co., 915 W. Second St. — FRanklin 6-1068

MEMPHIS — T. J. O'Brien Engineering Co., 668 S. Main — JAckson 6-0339

ORANGEBURG, S. C. — R. C. Dukes, Edisto Engineers, Box 418 — Jefferson 4-1521

RALEIGH — Charles Smith, Edisto Engineers, Box 11172 Mordecai Station — Vance 8-4597

This is April Showers—Southern

"Automatic Roof Cooling at Its Best"

Operating Under Authority of Leonard H. Holder, Patentee

Have you read North Carolina State's report on "Scientific Roof Spraying With Engineered Systems"?

For more information, use Reply Card—Page 87



Ridge Tool — Southern Demonstrations

Another Ridge Tool "Mobile Demonstration Wagon showing the newest and finest in pipe tools," has been announced by **Ridge Tool Company**, Elyria, Ohio. **John R. Wall**, a factory trained representative, will cover the southeastern states of Florida, Georgia, Alabama, Mississippi, Tennessee and South Carolina.

Wall will be working with Ridgid distributors and their salesmen calling on industrial plants, plumbing, heating, and electrical contractors and hardware stores. Working from a station wagon especially equipped with a portable generator, he will demonstrate all of the Ridgid Pipe and Bolt Threading Machines and Power Drives. He will also be able to demonstrate the complete line of Ridgid work-saver hand pipe tools manufactured by The Ridge Tool Company.



Rockwell — Ga.

William M. Connor, assistant to the vice president of **Rockwell Manufacturing Company's** Meter and Valve Division, has been promoted to general manager of the Statesboro, Ga., plant replacing Samuel W. Brown, who has been appointed assistant general manager of the Uniontown, Pa. plant.

Mr. Connor, who has had many years of production and management experience at several Rockwell plants, will be responsible for the manufacturing stages of several new petroleum and industrial products.

Before being promoted to his most recent position in 1956, Mr. Connor was general manager of the DuBois, Pa., plant. He joined Rockwell in 1929, became assembly superintendent at DuBois in 1947, works manager at Pittsburgh Headquarters in 1951 and general manager of the Tulsa, Oklahoma, plant in 1952.

FUTURE EVENTS of Engineering Interest

June 1-5: 5th World Petroleum Conference Exposition. Coliseum, New York, N. Y. E. K. Stevens, Exposition Mgr., International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

June 9-12: Material Handling Institute's Exposition. Public Auditorium, Cleveland, Ohio. W. L. Redding, Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa.

June 21-26: Annual Meeting. Air Pollution Control Association. Statler Hotel, Los Angeles, Calif. Harry M. Pier, Exec. Secy., APCA, 4400 Fifth Ave., Pittsburgh 13, Pa.

Sept. 17-18: 41st Annual Meeting. Public Utilities Assoc. of the Virginias, The Greenbrier, White Sulphur Springs, W. Va. Robert W. McKinnon, Exec. Secy., PUAV, 602 First Federal Bldg., Roanoke, Va.

Sept. 21-22: 57th Fall Meeting. Steel Founders' Society of America. The Homestead, Hot Springs, Va. SFSA, 606 Terminal Tower, Cleveland 13, Ohio.

Sept. 27-30: 3rd Annual National Power Conference: ASME and AIEE, co-sponsors; Hotel Muehlebach, Kansas City, Mo. Fred P. Gilpin, Kansas City Power & Light Co., Box 679, Kansas City 41, Mo.

Sept. 28-Oct. 1: Fall Meeting. American Welding Society. Sheraton-Cadillac Hotel, Detroit, Michigan. AWS, 33 W. 39th St., New York 18, N. Y.

Oct. 22-25: Annual Meeting. American Society of Industrial Designers, Grove Park Inn, Asheville, N. C. ASID, 15 E. 48th St., New York 17, N. Y.

Nov. 16-20: 5th International Automation Exposition & Congress. New York Trade Show Bldg., 500 Eighth Ave., New York, N. Y. Richard Rimbach Assoc., Inc., 845 Ridge Ave., Pittsburgh 12, Pa.

Anderson Electric — Birmingham, Ala.

The creation of a Special Products Division at **Anderson Electric Corporation**, Birmingham, Alabama, has been announced.

Its function will be to pioneer the commercial development of new and varied electrical products for use by industry, electrical equipment manufacturers and government agencies. The special Products Division will replace and assume the duties of the company's former Manufacturers Equipment Division. The Division Product Manager will be **W. N. Davidson.**

New product lines already being made available by the Division include military (AN) type connectors for unusual environments and crimp type connectors. Additional products are expected to be announced in the near future.

Mr. Davidson is a native of Montgomery, Alabama, and attended Alabama Polytechnic Institute and the University of Cincinnati, where he majored in electrical engineering. Before joining Anderson he was employed by General Electric Company in Cincinnati, Ohio as an electrical engineer.

How many spare parts should you stock per pump?



"You may be *over*stocking," says Phil Olmstead, *Chief Engineer*, Goulds Pumps, Inc.

"There are many times," one plant manager told me recently, "when we have a *higher* inventory of spare parts than the people we buy from!"

No laughing matter, this—many plants today are faced with the difficult problem of keeping stocks *adequate*, yet keeping inventories *down*. If your problem is *pump parts*, you can do both—by *interchangeability!*

For instance, take the Goulds Fig. 3405 single-stage centrifugal. You can get it in 33 sizes, with 66 combinations possible, considering right- and left-hand rotation.

Just 3 groups of parts fit all 66 combinations of this pump!

That means that, for every three to five pumps of a given group size (sizes are divided up three ways into "small," "medium," and "large" groups), we can recommend that you stock just one shaft, one set of bearings, sleeves, mechanical seals or packing. *In short, all parts are interchangeable except casings, casing covers and impellers!*

How much can that cut down your inventories? You figure it out—*one* set of group parts for as many as *five* pumps, where you might expect to stock one for each. *Three* groups for *thirty-three* different sizes of pumps—a *91% cutdown!*

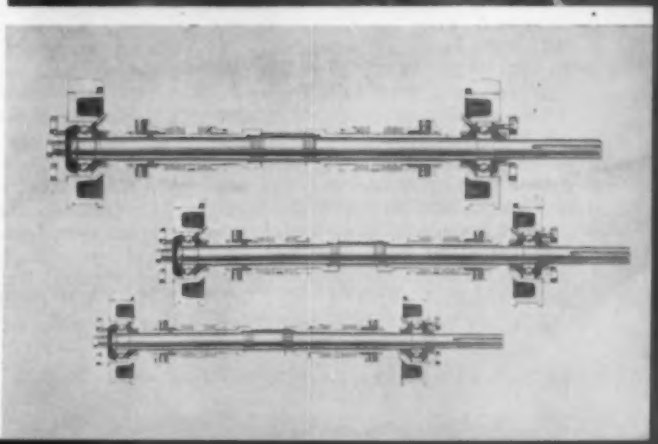
And here are three more advantages to consider:

1. You can make changes *in the field* to meet new needs.
2. You receive off-the-shelf delivery of parts you order.
3. Initial cost is lower due to standardization in manufacture.

The next time you talk to a Goulds representative, ask him to show you how interchangeability works in our Fig. 3405 . . . and in the rest of our line, too. If you want information right away, drop a line to me, Phil Olmstead, at Goulds Pumps, Inc., c/o Dept. SP-69, Seneca Falls, N. Y. I'll see that you get all the information you want.

GOULDS PUMPS





Just three groups of shafts, sleeves, bushings, glands, packing, ball bearings, bearing shell, end caps, closures and gaskets for Goulds Fig. 3405 pump to fit all 33 pump sizes.

News of the South-Southwest — more power . . . more plants . . . more money

Fairbanks, Morse Diesel Div. Manager

Fairbanks, Morse & Co. has announced the appointment of **Sheldon K. Howard** as Diesel Division Manager to succeed Carroll E. Dietle who has resigned.



Mr. Howard goes to Chicago from Atlanta where he has been Manager of the Diesel Department of the Atlanta Fairbanks-Morse branch for the past eight years. Prior to 1952 he was a diesel sales engineer in the Boston territory.

Graver Tank — SW

William H. Dwyer, Jr., has been appointed manager of Mid-Continent and Gulf Coast Sales for **Graver Tank & Mfg. Co.,** a division of Union Tank Car Company, with headquarters in Houston, Tex.

Dwyer's new position includes responsibility for sales of Graver's oil and gas equipment and other products in the Mid-Continent and Gulf Coast area. Mr. Dwyer previously was manager of Gulf Coast Sales for Graver Tank.

Oil and gas equipment sales, previously handled as a separate division of Graver Tank, now have been integrated into the overall sales and manufacturing operation in an expansion move, according to J. D'Aragon, general sales manager.

Two other appointments announced in connection with the expansion are: **Charles P. MacDonald,** assistant product manager at the Oil & Gas Equipment plant in Sand Springs, Okla., and **E. G. Vail,** Plant Manager of the Sand Springs plant, being in complete charge of all manufacturing operations.

Vail has been with Graver Tank for 10 years. Trained in Graver's headquarters plant, he was advanced to administrative posts in Oklahoma. In his new position he will have charge of all manufacturing operations in the Sand Springs plant.



Graver Tank's headquarters is at East Chicago, Ind. At this plant and its four other plants across the country, Graver fabricates tanks and process vessels for erection by its own crews throughout the United States and overseas. Graver Tank serves the petroleum, chemical, power and nuclear industries as well as producing municipal and industrial water storage tanks. It has plants in Wilmington, Del.; Fontana, Calif.; Houston and Sand Springs.

Exide Contest Award

J. A. Cronk, of Atlanta, has been named one of his firm's most effective branch sales managers as the result of national competition conducted by the **Exide Industrial Division** of The Electric Storage Battery Company, Philadelphia.



Placing third in this national sales contest, Mr. Cronk won a bronze plaque in recognition of his outstanding sales, service and management achievements during 1958. Exide's branch sales manager of the year was **J. A. Klingensmith,** of Washington, D. C. Runner-up was W. W. Grundel, of San Francisco.

Cronk, who serves Exide in the Southeastern Atlantic states, competed against 15 Exide branch managers whose territories cover the rest of the country. He has been with Exide in Atlanta for 33 years and branch sales manager since 1945. He has his offices at 1246 Allene Avenue, S. W.

Sumo Pumps Representative

Thomas Parsons has been appointed factory representative for **Sumo Pumps, Inc.,** Stamford, Conn., to serve in Georgia, Alabama and Northern Florida. He will handle the entire Sumo line of 1/3 hp to 120 hp submersible pumps.

Mr. Parsons has been in the industry as a pump specialist for over 30 years. He will make his headquarters at 4420 Skyland Drive N.E., Atlanta, Georgia.

Anderson Electric — Georgia & Florida

Gaddis G. Hall has been appointed factory sales representative for **Anderson Electric Corporation** of Birmingham, Ala. in South Georgia and Florida.

His new territory will be South Georgia and all of Florida with the exception of the extreme northwestern part of that state. Mr. Hall is a native of Crystal Springs, Mississippi, and an electrical engineering graduate of Mississippi State University.

He will be based in Miami.

(*Continued on page —*)

HAGAN NEWSLETTER
Behind the Panel



HOW AUTOMATIC ARE AUTOMATIC CONTROLS?

The answer depends a lot on the reliability factor in the system, and on how well the various control elements are integrated. A great many control systems are designed to operate on full automatic only when the process is within normal operating range. In applications where the process can vary widely, or where operators must be relieved of control supervision during abnormal conditions, true automatic control is desirable. Hagan systems are designed to accomplish this; for example:

OUTDOOR BOILER CONTROL SYSTEM STAYS ON AUTOMATIC DURING GENERATOR TRIP-OUT: a new outdoor utility station in the Southwest experienced a generator trip-out, and in the excitement, the 3-element feed-water control system was left on automatic. Inspection of charts after the difficulty was overcome showed that the feedwater system had maintained proper drum level throughout the two hour shut-down, even though the system went through the complete shut-down, start-up cycle.

SOAKING PITS NEVER OPERATED ON MANUAL CONTROL: on a new installation of two batteries of 3 pits, the heaters are instructed never to operate on manual control. In case of control malfunction, the pits are shut down until the system is repaired. In a year of operation, this policy has resulted in the loss of only four pit hours production time. Pit bottoms have not built up excessively, indicating close control of combustion and absence of ingot washing. (Item A-1)

FIRST SOLID STATE ELECTRONIC BOILER CONTROL SYSTEM

Operational magnetic amplifiers, used as basic control elements in the combustion, feedwater, pump recirculation and steam temperature control systems, will be installed on a new 1,260,000 lb/hr boiler at a Southern utility. The Hagan proposal--for the first solid state electronic boiler control--was selected by the utility in competition with two other electronic systems that did not achieve the reliability inherent in a solid state system. (Item A-2)

ELECTRONIC TEMPERATURE CONTROLLER SENSES 0.000001 VOLT CHANGE

Ultrasensitive, the Hagan PowrAmp Temperature Controller is responsive to thermocouple output fluctuations of one-millionth of a volt. Designed for precise temperature control in situations where either the heater or the product temperature can change rapidly, the Controller provides adjustments for proportional band, reset, and rate action. While this is a new instrument, it has already been proven in action. It was selected for the critical job of controlling glass fiber drawing dies operating at 1600F and it is limiting die temperature fluctuation to less than 0.25F. The Controller provides stepless regulation and will handle up to 330 kva through saturable reactors. (Item A-3)

NEW POWRLOG OFFERS LOW-COST TEMPERATURE MEASUREMENT OR CONTROL

Our systems engineers wanted a rugged, low-cost remote recorder for process measurement in industrial applications. Once we decided that the right way to minimize maintenance was to make use of unitized construction, the acorn we had been asked for rapidly became a full fledged oak. We ended up with an instrument that will measure any function that can be converted into an error voltage, either AC or DC, and then convert these voltages into mechanical movement that may be used for driving a recorder, indicator, integrator, pneumatic transmitter or a controller.

Utilizing a unique amplifier that is adaptable to a wide variety of applications by means of plug-in input boxes, the new HAGAN PowrLog is particularly well suited for the remote measurement and/or control of temperature with either thermocouples or resistance bulb thermometers. The components of this versatile instrument have been selected for accuracy and high reliability--result--maintenance has been reduced to a new low. (Item A-4)

HAGAN CHEMICALS & CONTROLS, INC.
Hagan Building, Room 700, Pittsburgh 30, Pa.

If you would like more information on any of the above items, check the appropriate box below.

☐ Item A-1 ☐ Item A-2 ☐ Item A-3 ☐ Item A-4

INDUSTRY SPEAKS

Two-Way Benefits of Move to South

MR. DAVE LAWTON, General Manager of General Electric's Medium Transformer Department in Rome, Georgia, made the following comments at the time the 12,000th transformer was completed by the Rome plant.



IT'S NO SECRET that the South has played a major role in the industrial expansion of the past decade. Quite a bit of publicity has been given to the expansion and movement in recent years of the textile, chemical, and paper industries into the South and Southwest. The manufacturers of heavy electrical apparatus have also been a part of this expansion into this area of the country.

For example, General Electric now has five major autonomous apparatus departments in the South — in addition to other manufacturing facilities reporting to headquarters elsewhere. The Medium Transformer Department was, in a sense, the pioneer mover, beginning the manufacture of transformers in Rome some five years ago. Other departments which have located in the South since 1954 are Industry Control, Specialty Control, and Communications Products in Virginia, and Outdoor Lighting in North Carolina.

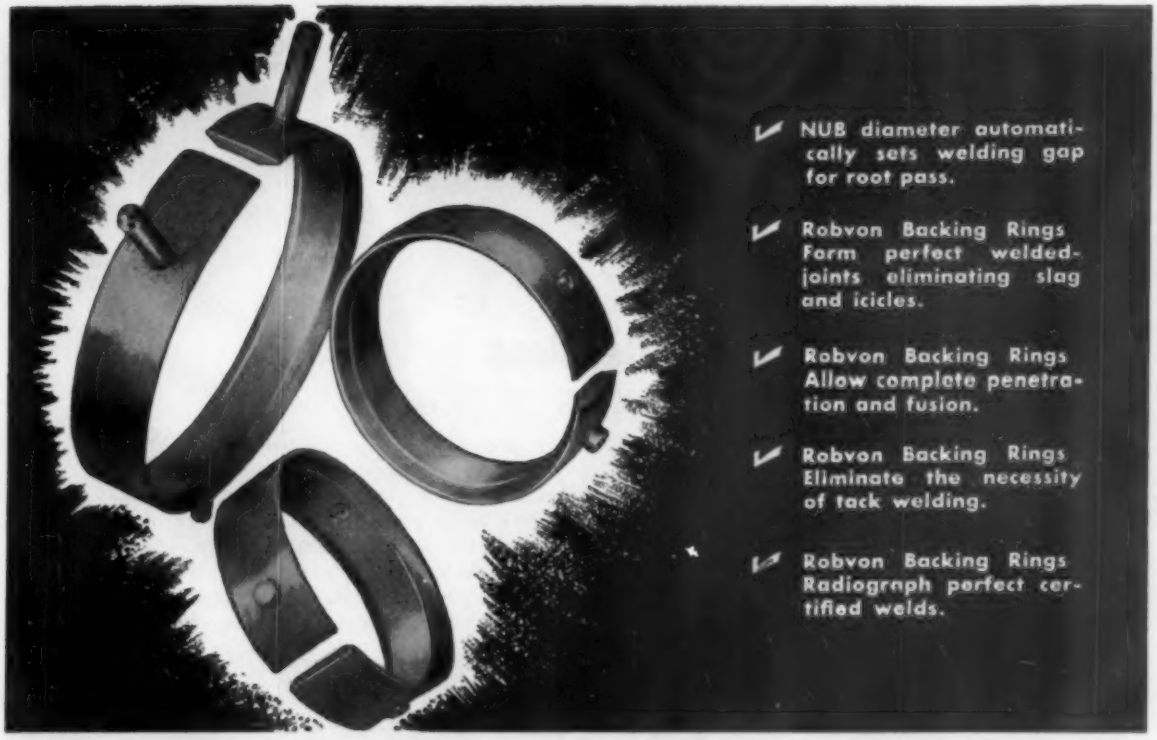
There are two principal reasons behind these moves — a company-wide decentralization policy put into effect in 1948, and the desire for geographical diversification to obtain more efficient operations. The latter is something businessmen will always be seeking. Decentralization was brought about by the Company's desire not to have all its manufacturing clustered in one area for reasons of national defense, and to give individual plant managers a chance to operate as small, separate companies within the framework of a larger organization.

Opening new facilities allows manufacturers opportunities for experimenting with new procedures. The Rome plant is the only one in the world set up specifically for the manufacturing of medium transformers, rating from 501 to 7500 kva, 69 kv and below. Previously General Electric manufactured its medium transformers on a job shop basis in Pittsfield, Mass. With the new plant in Rome we are able to manufacture these units on an assembly line basis and obtain new business heretofore unavailable to us. We were able also to expand our product lines.

The nucleous of our operation was 110 engineering, administrative and marketing people who moved to Rome with their families from Pittsfield, Mass. before the plant opened. The remainder of our 1,100 employees — with the exception of a few scattered men who came down later — are all local people. We believe that because of this, plus management's intense desire to have the plant become part of the community, we have become an integral part of life in Rome.

Many of our people are active in community affairs — such as the Red Cross, Cancer Committees, or the little league. This activity is highly encouraged. People that like the town in which they live are better employees.

In our five years at Rome we feel that we have become the leader in the transformer types that we produce. We hope that the progressive spirit built up during this period will continue so that we may hold this position of leadership and develop even better products. In so doing we will be helping the continual growth of this entire area.



ROBVON BACKING RINGS

APPROVED FOR WELDED PIPE, VALVES, AND FITTING JOINTS

Available in carbon steel, wrought iron, chrome alloys stainless steel, aluminum and copper

TYPE CCC Designed for quick easy alignment of pipe where the variation in inside diameters is relatively great. Chamfered NUBS allow close tolerance fit-up and CLEAN STRIKE OFF. The ROBVON NUB automatically sets root gap. ROBVON rings are beveled to assure non-restricted fluid flow.

TYPE CC Designed to allow quick easy alignment of pipe where the inside diameters are slightly out of round. The welder has the choice of "STRIKING OFF" the NUBS or leaving them intact to be melted into the weld mass of the first root pass.

TYPE C Designed for precise close tolerance fit-up. Type "C" NUBS automatically sets root gap. The NUBS melt with the metal to give complete penetration and fusion.

Robvon also manufactures machined rings to customer's specifications
All fabricated solid machined rings x-rayed. Write for full information

ROBVON
BACKING RING COMPANY

675 GARDEN STREET ELIZABETH, NEW JERSEY

TIMELY COMMENTS

Quick Decisions

THE EXPRESSION is frequently heard, "Managers must make quick decisions." But if any real authority on management procedures ever made any such statement, his identity has been forgotten.

Perhaps that expression was appropriate long ago when managers' decisions were small and unimportant compared with today's. Or maybe it was meant to apply only to lower positions such as operators and mechanics. Certainly those employees that deal directly with machines in motion must occasionally take quick action to avoid calamity.

But real managers deal primarily with people and long-range planning. Their decisions are usually effective over an extended period. They are concerned primarily with averages, norms and trends — conditions and procedures that determine net profits at the end of the year.

Men in such important positions will be continually bumping their heads if they go off half-cocked on quick decisions before studies have been completed, before department heads have been consulted, and before all available facts are on the conference table.

Good managerial decisions are hard to make. Essential facts are elusive, particularly with regard to personnel and competition. A certain amount of contemplation and standing at the listening post is necessary. In fact the best of managers can hope to be right only a little over one-half of the time in some types of decisions.

Even when a manager knows all the answers to a certain problem, he is seldom well advised to deal out the decision quick-like-that. Success of his judgment depends largely on others that must give it effect.

He has to inspire and lead his people. And even a good decision is not well received if the people concerned are presented a quick ultimatum without a chance to have their say.

But important as is the department head participation, the conference method of management is losing popularity. It seems too many managers have been using the conference as a lazy way of avoiding responsibility. So the trend is back toward the old method of talking and advising with individuals and making special studies to arrive at practical answers.

How many times has a manager had to make an important decision right-off-the-bat?

Good decisions, yes! — and no dilly-dallying. But quick decisions are purely for the lower bracket employee who must decide right now what to do about the hot bearing, the leak in the stock room or too many rejects from machine No. 7. The manager is allowed more time for inquiring, planning and discussing. Another week for thinking it over won't cost much compared to the hazard of being wrong on such things as policy, personnel and planning.

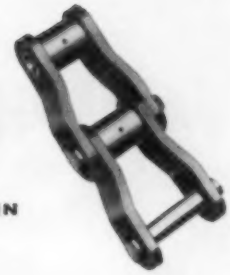
But when he is sure that the question is unimportant, or that "Yes" is as good as "No," he can safely exercise his flare for speed and deal out a real "quick decision."

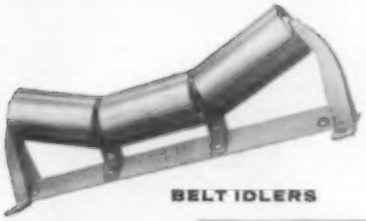
Mention of those unimportant things that come to management's attention brings up the fact that even in the best organizations too many unnecessary questions are brought to the manager for an answer. And conversly, too many important things are allowed to rock along without reaching his attention. Perhaps these foibles of the organization contribute largely to the quickie technique. Perhaps the department heads and employees don't give their managers opportunity to really study and properly solve genuine management problems.

But faults of the organization are in themselves the managers' responsibility. If he selects and trains good department heads and delegates authority on departmental problems, he will then have more time for important work and is not likely to be forced to make quick decisions. Then, presuming he is otherwise qualified, he will seldom have to suffer the consequences of bad judgment.



CHAIN





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PULLEYS



PILLOW BLOCKS



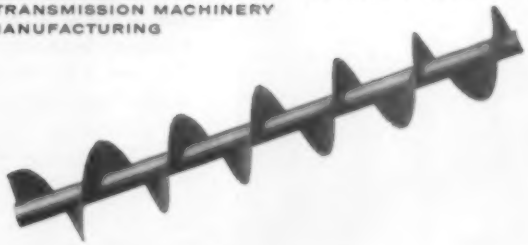


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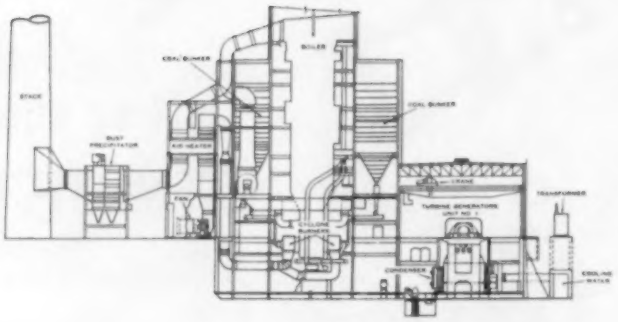
SPIRAL CONVEYORS



For more information, use Reply Card—Page 87

Three Units Will Have 750,000 KW Capacity

POWER for MEMPHIS



THE THOMAS H. ALLEN Generating Station being constructed for the City of Memphis will be of modern compact design, consisting of three units with a total rating of 750,000 kw. The plant will cost approximately $132,000,000. The first unit began operation in December, 1958.

ANTICIPATING the expiration of its wholesale power contract with the Tennessee Valley Authority on June 1, 1958, the Memphis Light, Gas & Water Division planned in 1955 to build its own generating station. Fast growing power needs demanded a reliable and low-cost source of abundant electrical power.

On August 19, 1955, Burns and Roe, Inc., were awarded the engineering contract to proceed with the selection of site, determination of size, and the design for the new power plant.

The plant is adjacent to Mitchell Road on the south side of McKellar Lake, across from the Presidents Island industrial development, about 5 air miles southwest of the business center of Memphis.



COVER PHOTO — Interior of a cyclone furnace, during erection. There are seven such cyclones in each of the three Babcock & Wilcox boilers. Steam generators are capable of delivering 2.1 million lbs of superheated steam (1053 F, 2475 psi) per hr.

This is believed to be the largest power plant of its kind ever authorized at one time by a municipality. Unit No. 1 — generating 250,000 kw — went into operation early in December, 1958, and completion of the other two units is expected in 1959. When finished, the plant will provide 750,000 kw of electric power to the residents and industries of one of the South's rapidly growing areas.

The operating floor at an elevation of 240 feet is 8.6 feet above the highest recorded flood-stage of the Mississippi River, and from 5 to 5½ feet higher than the existing levee system.

The retaining wall is a counterfort and wall type construction designed to retain the earth fill to elevation 238, which is 2 feet below the top of the wall. Outdoor equipment and coal storage are at this elevation.

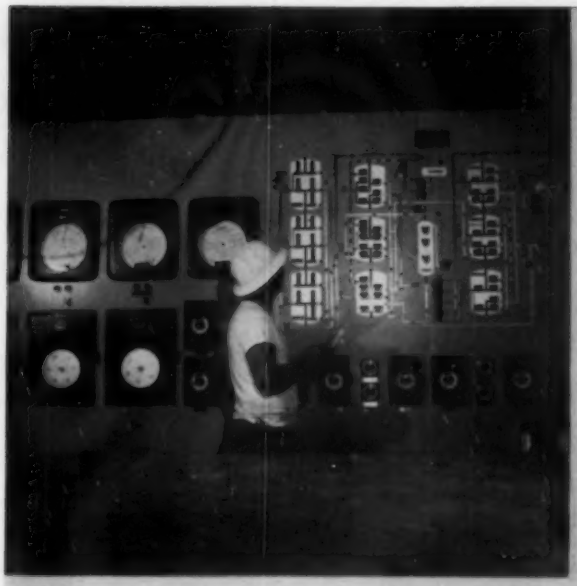
The walls are constructed in blocks of 12, 24 or 36 feet to avoid shrinkage cracks. The complete pour, 41 feet high, was made at one time. Placement of concrete proceeded at a determined uniform rate to avoid overstressing the form.

Circulating Water

Cooling water requirements will be 550,000,000 gallons per day for the three initial units and 1,100,000,000 gallons per day should plans materialize for three additional units.

The circulating water intake structure, housing the traveling screens and water pumps, is located at the edge of McKellar Lake. The dual tunnel from the intake structure enters the intake tunnel between units 2 and 3. The 8 foot wide, 12 foot high intake tunnel rests on the counterforts of the north wall and extends east and west for a total of 436 feet 10 inches at a top elevation of 223 feet.

From the intake tunnel, each electric generating unit is serviced by an individual circulating water tunnel 7 x 7 feet, which is recessed into the slab at a top elevation of 194¼ feet. Each circulating wa-





Keeping track of the water treating system is easy with this mimic panel.

Vertical board in main control room of Thomas H. Allen Generating Station.





Two conveyor belts, shown during installation, deliver 1,100 tons of coal per hour.

Fourteen 3-phase 161-kv oil-filled circuit-breakers are arranged in-line.

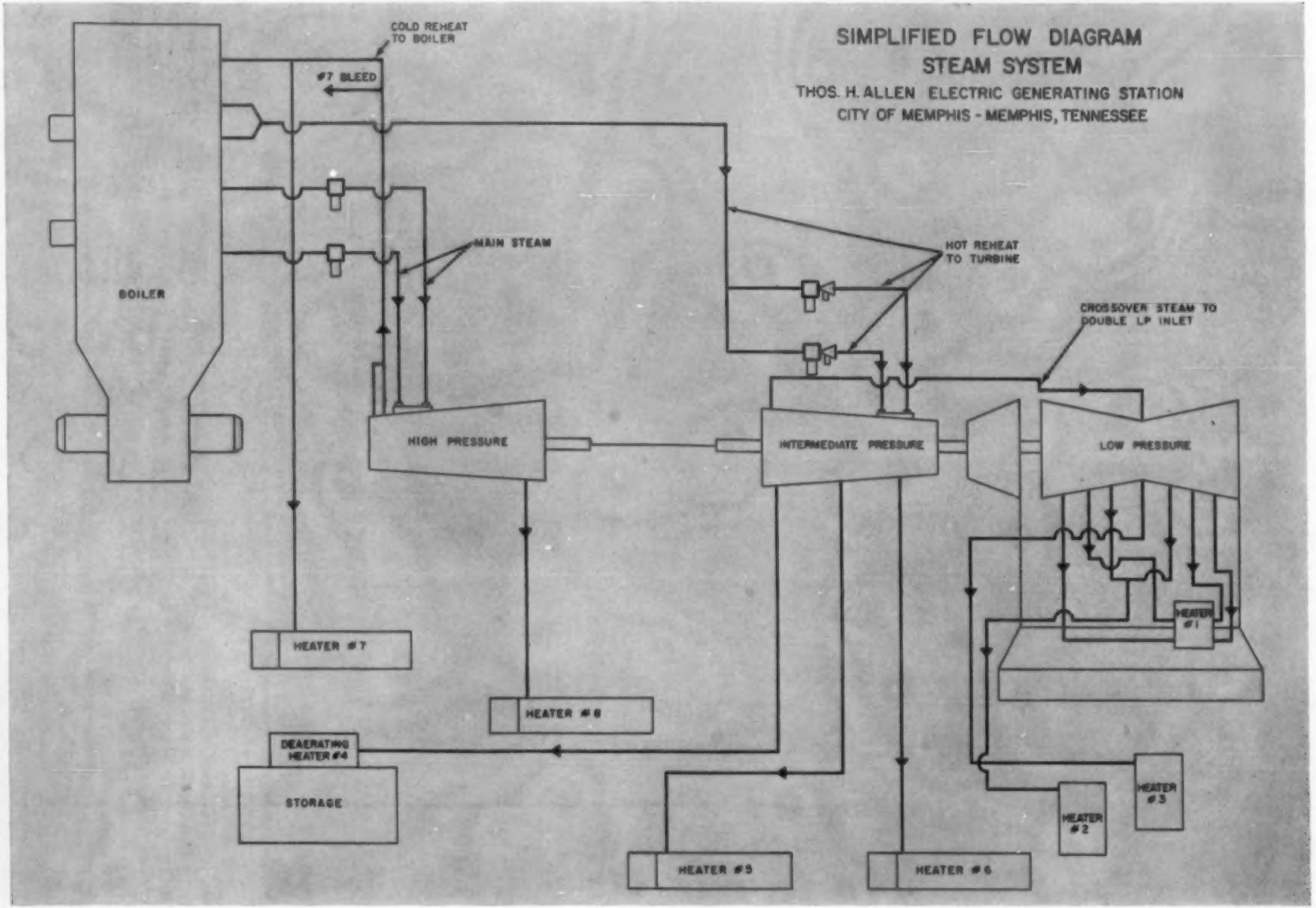
ter tunnel extends southward at a top elevation of 194 feet 3 inches for 152 feet 10 inches, and after running under the turbine-generator foundation, terminates at its south edge.

Turbines

Each of the three initial turbines are Westinghouse, 3600 rpm, three cylinder, tandem compound, triple exhaust type with a nameplate capacity of 250,000 kw each. The machines are operated at steam conditions of 2400 psig and 1050 F at the turbine throttle with reheat to 1050 F.

The high pressure turbine (first cylinder) has a 1 two-row impulse stage and 13 pairs of reaction blading. The intermediate pressure turbine in the middle cylinder has 10 pairs of reaction blading. The low pressure turbine part of the middle cylinder has 7 pairs of reaction blading, and each half of the double low pressure turbine (third cylinder) has 7 pairs of reaction blading.

The overall length of the tur-


SIMPLIFIED FLOW DIAGRAM
STEAM SYSTEM
THOS. H. ALLEN ELECTRIC GENERATING STATION
CITY OF MEMPHIS - MEMPHIS, TENNESSEE
COLD REHEAT TO BOILER
#7 BLEED
MAIN STEAM
HOT REHEAT TO TURBINE
CROSSOVER STEAM TO DOUBLE LP INLET
BOILER
HIGH PRESSURE
INTERMEDIATE PRESSURE
LOW PRESSURE
HEATER #7
HEATER #6
DEAERATING HEATER #4
STORAGE
HEATER #5
HEATER #6
HEATER #1
HEATER #2
HEATER #3

bine-generator is 106 ft 9¾ in. The overall width is 27 ft 0 in., and the overall height is 12 ft 10 in. above the floor. The turbine has eight extraction openings which are used for feedwater heating. The turbine is equipped with a hydraulic oil relay type main speed governor.

Condensers

The three condensers are of the multiple pass, sectionalized type. Each condenses 1,224,015 pounds of steam per hour, discharging to 1.5 in. Hg., with circulating water at 63 F.

There are 52,000 tubes, 3 feet long, in each condenser. Reversing valves are provided for backwashing tubes during operation.

The six circulating water pumps are integral flume type, driven by 1250 hp motors at 360 rpm. Each is capable of delivering 63,500 gpm.

The six condensate pumps are multi-stage type. Each is driven by a 700 hp, 1175 rpm motor.

The discharge lines consist of a 4000 foot reinforced concrete tunnel in series with a 4400 foot open canal. The tunnel consists of two tubes, each 12 feet by 12 feet. Two sluice gates are installed at each tube near the seal well. At the west end, the tunnel terminates in a reinforced concrete stilling basin and the water discharges over a reinforced concrete weir into a riprap lined open cut canal. The canal is 30 feet wide at the base with sides sloping 1 on 2 to natural grade.

Steam Generators

The building under construction will contain three B & W cyclone type steam generators with a capacity of 2,100,000 pounds per

Principal Equipment . . . Thomas H. Allen Station, Memphis, Tennessee

STEAM PRODUCTION EQUIPMENT

Steam generators, 3 ..... Babcock & Wilcox Co.
Radiant, pressurized, reheat type, multiple cyclone, fired with crushed bituminous coal and/or natural gas. Rating — 2,000,000 pounds of steam per hour continuous at superheater outlet conditions of 2475 psig and 1053 F. Four-hour peak capability — 2,100,000 pounds of steam per hour. Reheater designed for normal continuous rating of 1,620,000 pounds per hour at 1053 F and four-hour peak capability of 1,690,000 pounds per hour. Cyclones are arranged for opposed firing, four on front and three on rear of boiler. Water-cooled furnace walls, continuous-tube economizer, continuous-tube primary superheater, platen-type continuous-tube secondary superheater, continuous-tube reheater.

Air heaters, 6 ..... Air Preheater Corp.
Ljungstrom regenerative, vertical shaft, 185,000 sq ft surface each.

Fans, 6 forced draft, 6 recirculating gas ..... Sturtevant Div.
Forced-draft fans, 1750 rpm, 1,160,000 lb per hr air at 80 F and 57.7-in. W.G., double inlet, inlet vanes, outlet damper. Recirculating gas fans, 700 rpm, 345,000 lb per hr at 650 F and 14.1-in. W.G., single inlet.

Soot blowers ..... Diamond Power Specialty Corp.

Slag and fly-ash system ..... United Conveyor Corp.

POWER-GENERATING EQUIPMENT

Turbine generators, 3 ..... Westinghouse Electric Corp.
Three-cylinder, tandem-compound, triple-flow, impulse-reaction, condensing reheat type, 3600-rpm turbines, 2400 psig, 1053 F, reheat 1053 F. Eight extraction points, 1.5 in. Hg absolute pressure exhaust. 320,000-kva, 3-phase, 60-cycle, 24,000-volt, hydrogen inner-cooled generators. Exciters, three 1150 kw, 375 volt, 718 rpm gear driven; three pilot exciters, 10 kw, 250 volt, 718 rpm and one spare motor-driven common standby.

Surface condensers, 3 ..... Worthington Corp.
Horizontal, 2 pass, divided water box, 135,000 sq ft each, 1,375,000 lb per hr, 63 F cooling water.

Circulating water pumps, 6 ..... Worthington Corp.
Vertical 1250-hp motors, 360 rpm, 63,500 gpm at 50 ft head.

Valves ..... Henry Pratt Co., Crane Co., Lewis Supply Co. (Manning, Maxwell & Moore, Inc.)

Air ejectors, 3 ..... Worthington Corp.
Triple element, 2 stage, separate inter- and after-condensers.

FEED-WATER EQUIPMENT

Boiler-feed pumps, 9 ..... Pacific Pumps, Inc.
Horizontal, double case, 12 stage, 3475 rpm, 2100 gpm at 3160 psig. Pump temperature 300 F, 5000-hp constant-speed motor and variable-speed fluid couplings.

Condensate pumps, 6 ..... Byron Jackson, Inc.
Vertical four part, multisection, 1160 rpm, first section 2710 gpm, second section 2930 gpm, third section 3060 gpm and fourth section 3210 gpm, at 84, 32.5 55 and 117 psig total head, respectively.

Feed-water heaters, 9 ..... Cochrane Corp.
Vertical, jet-type direct-contact open heaters with internal vent condensers, 1,233,000 to 1,368,000 lb per hour at 7.6 to 37.3 psia respectively.

Feed-water heaters, 12 ..... Alco Products, Inc.
Horizontal, closed type, U-tube, 2 pass, integral drain coolers, 2,000,000 lb per hour at 3075 psig ⅝ in. OD, 17-, 16-, and 14-gage Monel tubes.

Deaerators, 3 ..... Cochrane Corp.
Horizontal tray, 1,434,000 lb per hour with integral storage tank of 20,000-gal capacity.

Demineralizers, 1 ..... Graver Water Conditioning Co.
Activated carbon filters, 3, 500 gpm each. Vacuum degasifier, 1, 500 gpm. Exchangers; cation, 3, anion, 3.

Coal Handling Conveying Equipment ..... Link Belt Co.

Precipitators, Electrostatic, 6 ..... Aerotec Corp.

Combustion and Feed-Water Controls ..... Bailey Meter Co.

MISCELLANEOUS EQUIPMENT

Soot blower air compressors, 4 ..... Worthington Corp.
Three stages, reciprocating, 4800 cfm, 275 psig, 327 rpm.

Bearing water coolers, 6 ..... Condenser Serv. and Eng. Co.
Horizontal, 1 pass, cooling 800,000 lb per hour from 120 F to 95 F in 1-in. OD, 18-ga tubes.

Miscellaneous centrifugal pumps ..... Worthington Corp.

Traveling water screens, 9 ..... Link Belt Co.

Coal scales, 21 ..... Richardson Scale Co.

Turbine-room cranes, 2 ..... Shaw-Box Crane and Hoist Div.

Vacuum cleaning system ..... U. S. Hoffman Machinery Corp.

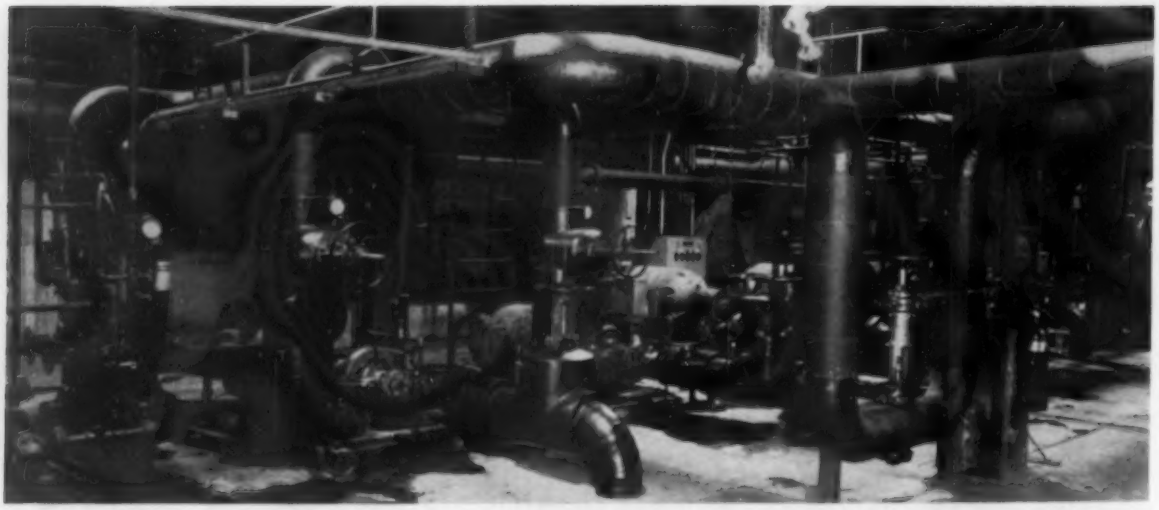
Auxiliary-power switchgear ..... General Electric Co.

Switchyard equipment ..... General Electric Co.

Bus ducts—main and station ..... I-T-E Circuit Breaker Co.

Transformers ..... General Electric Co.

Motors ..... General Electric Co., Elliott Co., and Westinghouse Electric Co.



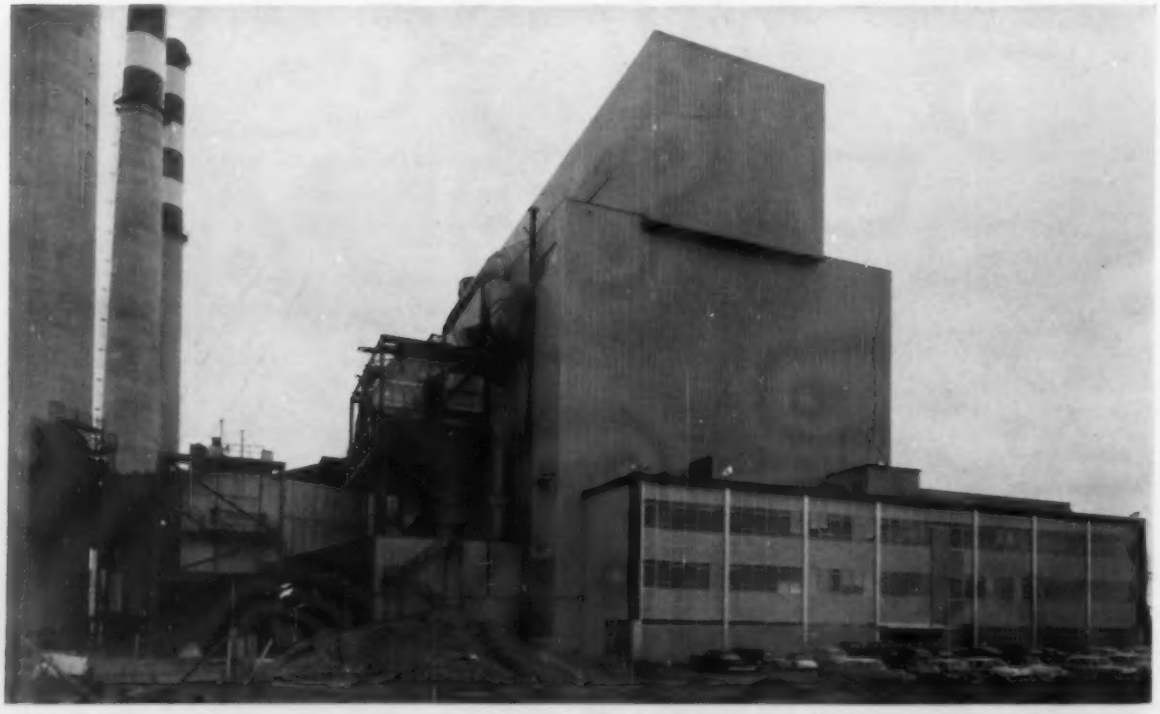
Ash sluice pumps in Thomas H. Allen Station.

hour; superheated steam temperature of 1053 F and operating pressure of 2475 psig. They are the radiant, pressurized, reheat type. No induced draft fans will be used. Chimneys are 400 ft high.

A combination of cyclone type boilers and electrostatic precipitators will remove 98.4 per cent of the original ash in the coal. After the flue gas leaves the precipitators it will pass into the 400-foot high stack.

The reheater is designed for normal continuous rating of 1,620,000 lb per hour at 1053 F and four-hour peak capability of 1,690,000 lb per hour. The cyclones are arranged for opposed firing, four on front and three on rear of the boiler. Water-cooled furnace walls, continuous-tube economizer, continuous-tube primary superheater, platen-type continuous-tube secondary superheater, and continuous-tube reheater are other features of the steam generators for the Memphis station.

The steam generators are designed for firing by either coal or



Construction view of plant showing arrangement of equipment.

natural gas. Each steam generating unit is provided with automatic combustion and temperature controls.

There is also an automatic water control system. An automatic sequential air puff soot-blowing system is provided for each steam generator.

Gas will be used in summer when the Gas Division has a surplus in excess of the residential and industrial requirements. At peak capacity the boilers will consume approximately 255 tons of coal per hour. Storage area will be provided for 90 days operation or 9000 carloads, approximately 450,000 tons. Coal will be delivered by barge.

Running under optimum conditions the turbo-generator units will have a heat rate of 8825 Btu per kwh. At 50 per cent load factor the heat rate will be 9100 Btu per kwh.

Generators

Each of the three generators is inner-cooled with hydrogen being circulated through both the stator and rotor windings. These are 3600-rpm generators and have the following ratings at 85 per cent power factor.

Hydrogen	KVA
30.0 psi	278,261
45.0 psi	320,000

The generators are single winding units with an output voltage of 24,000. Each generator requires 2220 cu ft of hydrogen for normal operation.

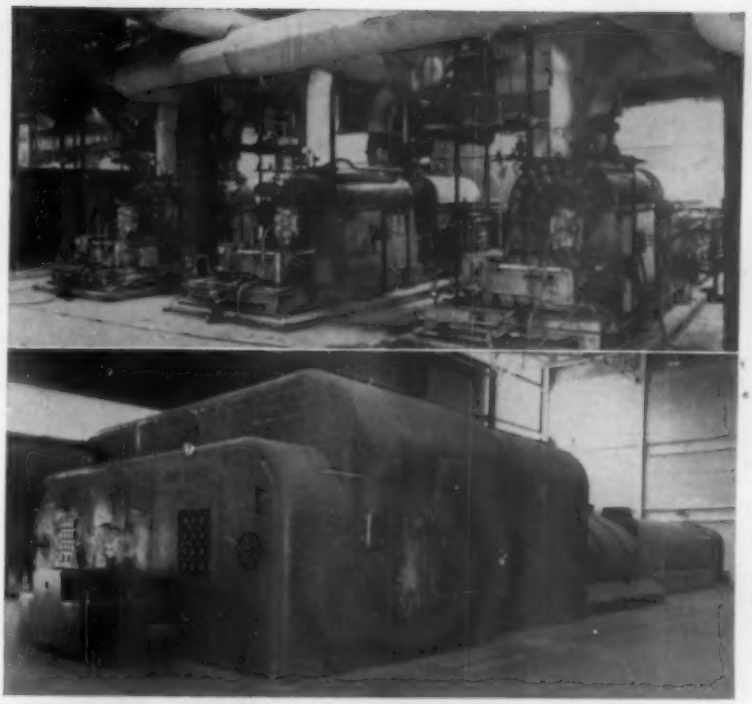
It is expected that the aggregate net capability of the three units will be 812,500 kw.

Exciters

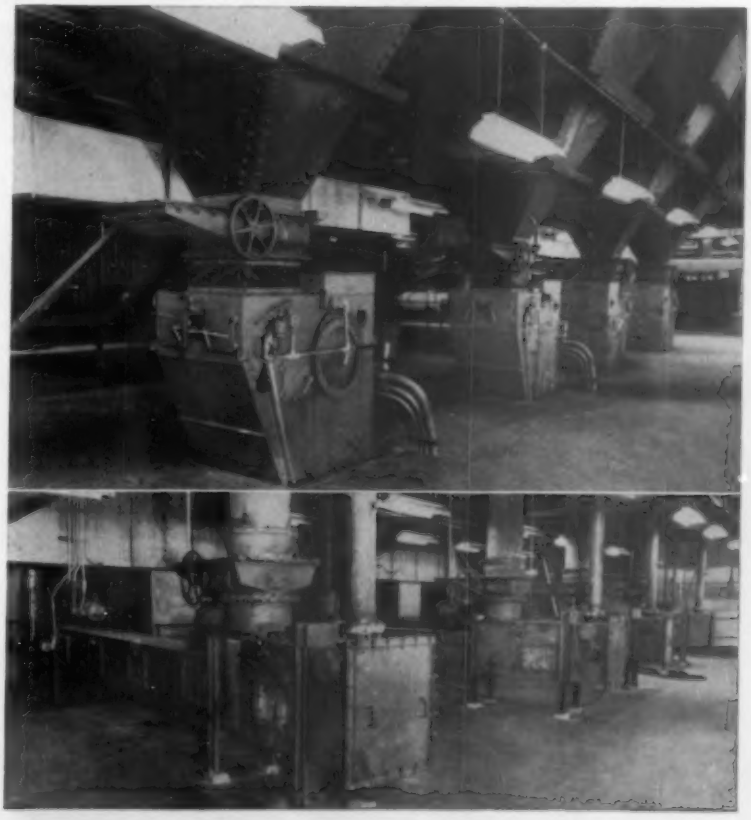
Each generator is served by a main exciter driven at 718 rpm through a reduction gear from the main shaft. Each exciter is rated at 1050 kilowatts at 375 volts. The exciters are controlled by Mag-A-Stat regulators which are static type, continuously acting regulators.

A 420 cycle per second motor-generator set provides the control power for the regulators. The exciters are cooled with room air drawn through filters.

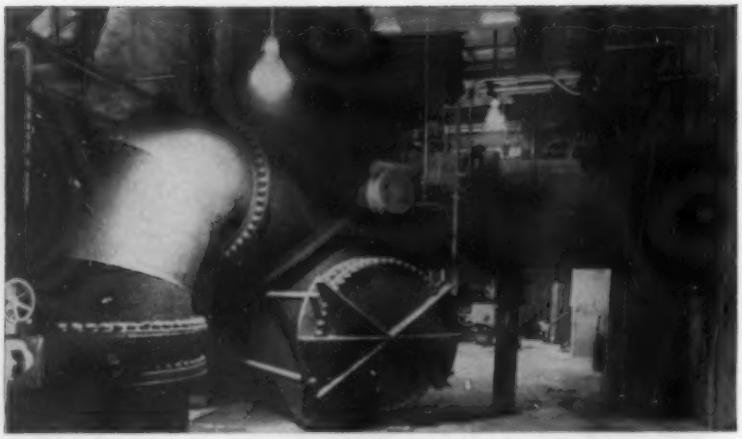
One spare motor-generator ex-



Boiler feed pumps, above. Turbine-generator, below.



Coal scales, above. Drag feeders, below.



Reversing valves at condenser.

citer unit is provided as a reserve unit for the entire plant. Its rating characteristics are the same as the main exciters.

Dispatching and Controls

A digital readout and logging system on combustion controls will record approximately 244 points, such as boiler drum and superheater temperatures, bearing temperatures, etc.

An automatic dispatching system is incorporated into the plant. It permits incremental economic loading, using any and all of the three units most efficiently under prevailing conditions.

Remote control of the plant by the dispatcher in the Service Building is possible via the microwave system, connecting his office with the generating plant and primary substations around the City. The microwave has two functions: voice communication and signals that operate apparatus.

Cleaning System

Station cleaning equipment consists of a high vacuum centrifugal exhauster which operates at a vacuum of approximately 10" of mercury. The centrifugal exhauster is direct connected to a 30 horsepower, 3600 rpm electric motor. The collecting equipment consists of a 36" diameter primary separator and a 36" diameter secondary separator, having a large filter bag area.

Complete hose and tools for cleaning in the plant were supplied with the equipment and consist of 1½" and 2" cleaning accessories. The system was designed to handle simultaneously either six 50' lengths of 1½" hose or three 50' lengths of 2" cleaning hose. Inlet valves are strategically located throughout the plant to provide access to all areas where cleaning will be required.

Expected Performance

The plant will cost approximately $132,000,000, or approximately $162 per kilowatt of net capability.

To produce one kilowatt hour of electricity will require approximately 25½ gallons of cooling water, ¾ pound of coal and 7¾ pounds of steam at 1053 F.

A study of load growth indicates that Memphis will need a total of 1,625,000 kw net capability by 1965. As required by increasing loads, new generating units will be added at the present site or at another location to be selected.

Freon Cooler Efficiency Increased

A LARGE department store in the South installed a 50 ton refrigeration unit in 1940 with a 50 ton economizer located on the roof for cooling the Freon. Approximately 8 years after the installation of this equipment, it was speeded up to where the output was approximately 75 tons.

Some scale had formed on the finned coils of the economizer, and after increasing the output, it was necessary during the summer months not only to have a ¾ inch garden hose with 40 pounds pressure running into the unit but also a 1 inch gravity line flow from a 13,000 gallon cooling tower located approximately 25 feet higher than the economizer. But even with this volume of extra water coming into the economizer, the unit failed to operate as efficiently as it should in cooling the area for which it was designed and installed.

In the spring of 1958, it was recommended that an acid type cleaning agent be used to remove existing scale deposits so the unit would operate and deliver maximum cooling. Then a regular treatment program was established in order to remove scale deposits. For the first time in 10 years, no water was wasted from the unit nor was it necessary even during the hot summer months of 1958 to add any additional water as had been required in the past. The unit has operated at peak efficiency since the inauguration of this method of treatment.

In this particular unit, heavier than normal dosages have been applied in order to continue removing existing scale deposits. Once all the deposits are removed, controls will be reduced to where only a minimum amount of material is required for the make-up water added through evaporation.

By CLYDE A. FARRIS, JR.
Water Services, Inc.
Knoxville, Tenn.



INDICATIVE of the varying size motors repaired and maintained in the electrical maintenance shop of the Reynolds Metals Company Alloys Plant are the 1/40 horsepower motor held by Mack Romine, journeyman armature winder as he sits in the rim of a 5,000 horsepower stator which will be part of the motor used on a 120-inch-wide rolling mill to be installed in the plant as part of the current $65,000,000 expansion program there.

600 Spare Motors and a System at Reynolds' Alabama Plant

Keep 'em Rolling

By S. Q. DAVID, Plant Engineer
Reynolds Metals Company Alloys Plant
Sheffield, Alabama

A FAST, simple system for locating and moving electric motor replacements for vital production equipment is easing "down-time distress" at the big Reynolds Metals Company Alloys Plant near Sheffield, Alabama.

Key parts of the system are some 300 bins of motors and a master reference book listing more than 600 spare motors on hand. Each motor or group of smaller motors of the same type is kept on a pallet in a numbered bin. Tied to each motor is a big aluminum tag with the motor's Reynolds' serial number and basic data.

For each replacement motor there is an entry in the master index book showing the number of the bin in which it can be found.

The individual motor listings show the horsepower, make, frame (dimensions and mounting), speed, bearing type, the Reynolds' serial number and any special data.

For quicker reference, the motor listings are broken down into a-c, d-c and horsepower classifications.

During the normal work day in the electrical shop, the electrician on duty in the mill where the breakdown occurs calls the shop and gives specifications from the name plate on the faulty motor. The shop foreman checks his book and in seconds finds, in 95 per cent

THE EMERGENCY electric motor replacement system described in this article is in use at the Reynolds Metals Company Alloys Plant at the Listerhill plant site near Sheffield, Alabama.

Since the plant is more than 100 miles away from the nearest metropolitan area where electric motors might be rented, replacement motors present a special problem.

This plant is made up of a group of mills producing aluminum sheet, rod, bar, structural shapes, Reynolds Wrap aluminum foil, wire, cable, tubing, nails and stamping of blanks and circles.

The plant is well along with its current $65,000,000 expansion program which will increase its production capacity to 300,000 tons annually with 2,500,000 square feet under roof.

A highlight of the current expansion program is the installation of the world's largest aluminum hot rolling mill, a block-long giant headed by a 170-inch-wide breakdown mill.

D. H. Hipp is general manager of the Alloys Plant, and J. H. Schneible is plant superintendent.

of the cases, the exact replacement needed for key production equipment.

A fork-lift truck goes directly to the numbered bin indicated by the index book and lifts down the pallet with the replacement motor which is immediately taken to the scene of the trouble. It frequently arrives before the mill electrician has had time to take out the errant motor.

But before the replacement motor leaves the electrical shop, the large aluminum identifying tag is untied and dropped into the "out" box. This serves as an insistent reminder to electrical shop personnel that a motor of the same specifications is in need of repair and placing in the appropriate bin.

Although the locating system speeds replacement during normal working hours, it is particularly valuable at night and on weekends when the complex of mills is operating but the electrical shop is not. A motor breakdown on a piece of production equipment anywhere in the plant brings the electrician in that mill on the run to the electrical shop. In moments he has located a suitable replacement motor and usually he and the motor are back at the trouble scene inside of 10 minutes.

"Sure it's a simple system," says its developer, Electrical Maintenance Superintendent M. S. Barley. "But it's fast and it works."

"We've found it a lot better than having to search through a bunch of motors sitting on the floor, eating up time reading data plates on the motors, and when you finally find the motor you want (if you're lucky), having to get it from the floor onto a truck."

With more than 10,000 electric motors in use in the sprawling group of aluminum fabricating mills, there are hundreds whose failure could shut down production units.

The aim of the bin-and-book system is to have replacements readily available for 95 per cent of the vital electric motors. Complete replacement units for the other five per cent would be prohibitively expensive, but repair parts are available in the plant for many of them.

In the 17 years the big plant has been in operation, the electrical maintenance force has learned through experience the motors most likely to fail among the truly vital ones.

The largest motor now in use is 8,400 horsepower and operates on 6,900 volts. That happens to be

A FORK LIFT TRUCK is shown removing a pallet of electric motors "filed" in a numbered bin at the Reynolds Metals Company Alloys Plant near Sheffield, Alabama. The contents of each bin are coded to a master index book which is available day or night so that plant electricians may quickly find a replacement motor to restore production equipment to service in the big aluminum fabricating plant.





MAKING a continuity check on the stator for a 75 horsepower motor in the Reynolds Metals Company Alloys Plant is W. L. McVay, one of the journeyman armature winders in the shop. The shop is equipped to do virtually any motor job.



AN AIR-DRIVEN BLAST of ground-up corn cobs is used to clean the armature of a 2200 kw d-c generator in the electrical maintenance shop of the Reynolds Plant. Generators of this size are used in driving the massive rolling mills in the big aluminum fabricating plant.

on a massive three-stand sheet rolling mill. On the other side of the scale are fractional horsepower motors such as the minute selsyn motors used to position indicators. The failure of either can halt production and when they do the bin-and-book system comes into high speed play.

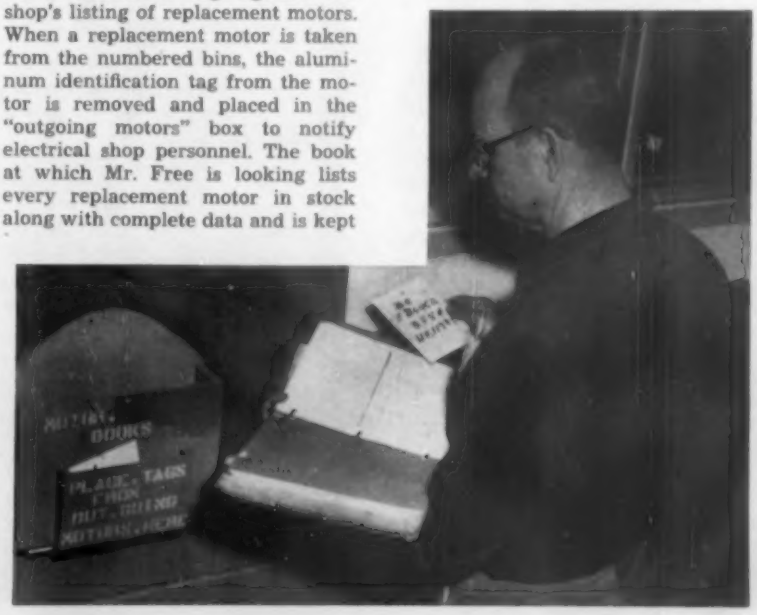
In addition to the master index box, there's a carefully kept card file on each motor repaired. This serves as an invaluable guide to an adequate parts supply.

There are nine skilled men in the electrical maintenance shop which has equipment comparable to that of a major commercial motor shop. The shop averages some 2,000 separate jobs per year, ranging from a field or armature rewinding job on 10-foot high motor to repairing the welding coils for the mill where aluminum tubing is produced or perhaps repairing a starter motor on a plant truck. Highly skilled repair jobs on scored motor shafts are routine with the shop's metallizing equipment.

On those infrequent occasions when a complete replacement motor is not quickly available, the plant electricians have become adept at making fast modifications. Motor mountings and gearings are changed rapidly in an emergency and sometimes the men in the well equipped plant machine shop are called on to cut the needed gears.

"Keep 'em rolling" is no empty phrase among the many skilled men working around the clock in the plant's maintenance department. Talking to them you quickly sense their quiet pride in their all-important role backing up the production crews in the multiplicity of mills which make up the Reynolds Metals Company Alloys Plant.

FOREMAN Silas P. Free, of the electrical maintenance shop checks an identification tag against the shop's listing of replacement motors. When a replacement motor is taken from the numbered bins, the aluminum identification tag from the motor is removed and placed in the "outgoing motors" box to notify electrical shop personnel. The book at which Mr. Free is looking lists every replacement motor in stock along with complete data and is kept in the box shown during hours when the electrical shop is not operating.



Effective Plant Maintenance Organization

By **THOMAS T. SCALA**
Plant Manager
Lock Joint Pipe Company
Columbia, South Carolina

WITH CONTINUING increase of automated mechanization in industry and capital investment per worker, maintenance is ever growing in its role of importance relative to other plant functions. Uninterrupted plant production is essential and yet plant machinery and equipment must be maintained at reasonable cost. When machinery and equipment are neglected productive capacity is reduced along with the quality of the product.

The maintenance or plant engineering department will function as efficiently and equal to the amount of attention and direction given it by management.

Management Obligation

It is management's obligation to set definite preventive maintenance policies to foster continuity of production with a minimum amount of breakdowns. One does not have to review the plant's historical productive record to properly analyze the need for improving plant preventive maintenance. It is never too late to start a functional preventive maintenance organization. To show the man-hours lost in production one can establish a down time record. This record will soon indicate where immediate attention is needed.

Continuity of Production

In the present day field of accepted maintenance policy, continuity of production is of primary importance. The continuity desired can be achieved by reviewing the present maintenance program to compare it with the accepted standards and practices. Preventive maintenance means to prevent emergency repairs and interruptions due to failures. This is accomplished by accumulating life expectancy records on machinery and equipment. If a bearing fails after eighteen months of use, it is recorded. When seventeen months pass this same bearing is likely to need replacing as a preventive procedure rather than let it fail and impair production.

It is the practice of some plants that have a good quantity of one type of machine to have several standby replacement machines in stock. As the life expectancy of a production machine is reached the old machine is replaced with a spare and is overhauled and

MAINTENANCE JOB ORDER

Date originated	Equipment number and location	Order number
2/18/59	Boiler Feed Pump #1	№ 2449

Charge Department Account No.	Time available for Repairs
3423	8AM 2-19-59

Description of job:

Replace Motor bearing (bell end) and repack pump gland.
Note: Pump installed 6-20-57
First bearing Change. Recommend replacing other bearings. J.D.

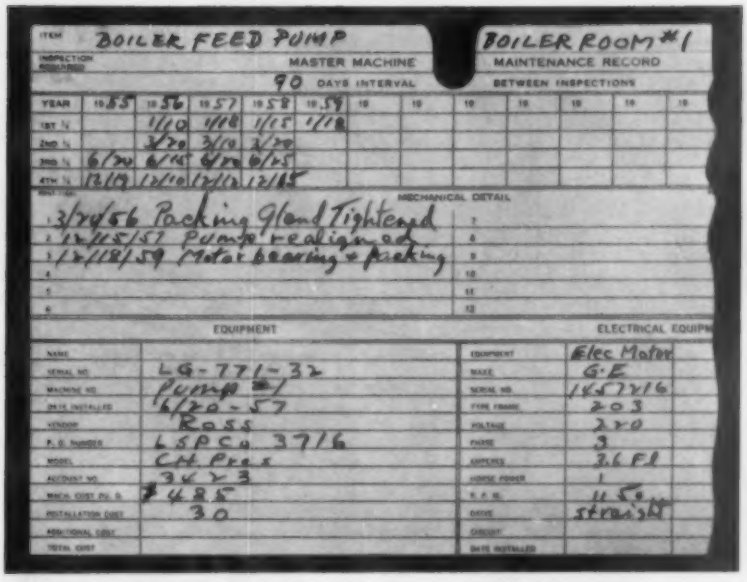
Material Required: — In stock? Yes No

(A) 2-SKF #2261-1 Bearings
(B) Anchor Chevron 3/4 ∅ packing

Material ordered: Date — Supplier:

Assigned to:	Start job:	Completed job:
Jno. Doe	Date 2/19/59 Hour 9 AM	Date 2/3/59 Hour 10:30 AM

	Cost Summary	actual	estimate	variance	
Labor	$3.75	1.5	2.	.5	Ordered By: Norton Approved By: A. Jones Completed By: J. Doe
Material	A - $2.25 B - $0.75				Note Labor at $2.50/hr.



ITEM: BOILER FEED PUMP — BOILER ROOM #1

MASTER MACHINE — MAINTENANCE RECORD

90 DAYS INTERVAL — BETWEEN INSPECTIONS

YEAR	1955	1956	1957	1958	1959	10	10	10	10	10	10	10
1ST ¼		1/10	1/18	1/15	1/18							
2ND ¼		3/20	3/18	3/20								
3RD ¼	6/20	6/14	6/20	6/15								
4TH ¼	12/19	12/10	12/10	12/15								

MECHANICAL DETAIL

1 3/24/56 Packing Gland Tightened
2 12/15/57 Pump realigned
3 12/18/59 Motor bearing & packing
4
5
6
7
8
9
10
11
12

EQUIPMENT — ELECTRICAL EQUIPM

NAME		EQUIPMENT	Elec Motor
SERIAL NO	LG-771-32	MAKE	G.E
MACHINE NO	Pump #1	SERIAL NO	1557216
DATE INSTALLED	6/20-57	TYPE FRAME	203
VENDOR	Ross	VOLTAGE	220
P. O. NUMBER	LSPCo 3716	PHASE	3
MODEL	CH Proc	AMPERES	3.6 FL
ACCOUNT NO	3 x 3	HORSE POWER	1
MACH. COST INC. O.	$485	R. P. M.	1150
INSTALLATION COST	30	DRIVE	Straight
ADDITIONAL COST		CIRCUIT	
TOTAL COST		DATE INSTALLED	

put in stock. This cycle repeats itself until all machines are rotated. This system of rotation has saved some industries considerable amounts of money and has proved its worth.

Organization and Responsibility

The Plant Engineering Department is usually responsible for plant preventive maintenance, planning, records, cost, work scheduling and procedures. This department, depending on the size of the plant, is sometimes assigned machinery improvement and development. The area of responsibility usually covers all machinery, equipment, electrical distribution, machine shop, boiler powerhouse, buildings, grounds, water lines, transportation equipment and sometimes new construction. Maintenance budget and control of cost are an important part of the plant engineering department's organization. Complete and up-to-date plant drawings are maintained by this department.

Skilled tradesmen vary with the size of the plant. The basic personnel might be electrician, mechanic, carpenter, millwright, painter, mason, welder, pipe fitter, tool room man and machinist. In larger and more complex industrial plants there are many more subdivisions of skilled tradesmen such as instrument repairmen and electronics technicians.

Inspection

Planned systematic inspection of machinery and equipment is essential to a good preventive maintenance program. It should be carried out by skilled inspectors who record their findings and make out work orders to be processed. The cycle and priority of inspection will be dictated by the importance of the machine with respect to production.

Standby Spare Parts

The stocking of critical spare parts is a necessity to keep emergency repair time to a minimum. When spare parts are maintained in large quantities an inventory record should be kept. The life expectancy study will indicate what critical spare parts are to be kept in stock.

Properly cataloged maintenance manuals and data should be filed for quick reference. It is advantageous to have a duplicate copy of all spare parts manuals in the plant engineer's office. It is quite desirable to follow the recommended maintenance instructions issued with machinery or equipment.

Lubrication

Proper lubrication is a fundamental principal to be followed to prolong the life of plant machinery and equipment. It is equally important to use the proper lubricant and at the given frequency as suggested in the maintenance manuals. Lubrication records should be kept, showing the type of lubricant and frequency of application or oil change.

Summation

1—Analyze the physical plant facilities.

2—Decide on the proper tradesmen required and their suitable compensation.

3—Establish a planned system for maintaining records, schedules, inspections, lubrications, repairs, overhauls and replacements.

4—Then coordinate these various functions into a truly functional preventive maintenance system.

The accompanying forms are serving adequately in our plant.

Wool for Bearings

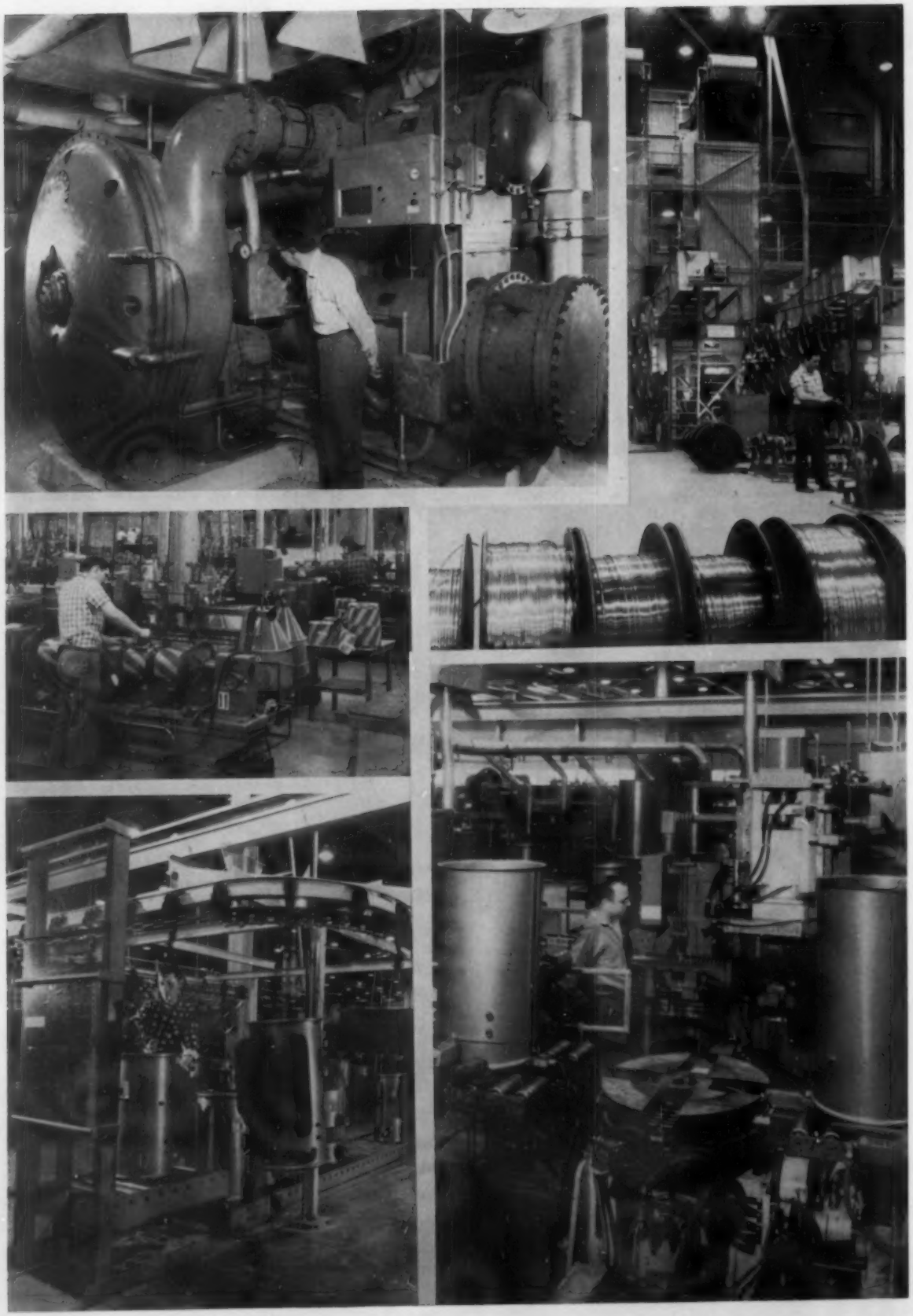
TO MAINTAIN our plant's electric motors, we've abandoned conventional brands of wool wicking for packing motor sleeve bearings.

Instead we use clean raw wool which has the advantage of natural lanolin in it and retains the bearing oil far better than the processed wool wicking previously used.

In addition, the processed wool cost us $4 a pound, while we get 15 pounds of fleece for $5.

By STANLEY CLARK, Maint. Supr., U. S. Phosphate Co., Tampa, Florida.





Brief Description of PLANT SERVICES and BUILDING

VIEWS on the opposite page show elements of Westinghouse Electric Corporation's new plant at Athens, Georgia, which turns out pole type distribution transformers at the rate of one every two minutes.

The single-story plant has approximately 620,000 sq ft of floor area. Lockwood Greene served as architect and the contractor was Daniel Construction Co. of Greenville, S. C.

Use of highly mechanized production equipment and modern quality control techniques make possible the economic, efficient production of high-quality, uniform transformers. Almost five miles of material-handling equipment includes: in-floor tow lines, overhead monoveyors, power-and-free conveyors, and many special racks, trucks, and transfer devices. The entire plant is laid out for straight-through flow of materials from receiving to shipping floor.

About 60 members of the Athens' organization were brought in from other Westinghouse plants, and the remainder were recruited from the area and trained on the site. Gordon Hurlbert, manager of the Company's Distribution Transformer Department, has commented on the excellent ability of the new employees and stated that they reached the skilled operator status in one-half the expected time.

Building

The one-story factory is rectangular and covers 561,600 sq ft. It has some balcony space, an attached boiler house, and a volatile store's lean-to. The two-story office building is "T" shape with "stem" attached to the factory. Its area is 58,400 sq ft.

The main plant is 600 ft wide by 880 ft long, and has steel columns, trusses, crane rails, girders and purlins. The office building is of steel frame, concrete and masonry.

Factory walls have tilt-up concrete slabs from the floor to a 6-foot-high window sill. Above a narrow band of aluminum sash is aluminum siding. All factory wall materials are suitable for removal and reuse. All sash is aluminum projected.

Exterior doors for personnel are aluminum and steel; truck and railroad doors are motor-operated rolling steel. Interior depressed truck and railroad facilities have been provided for shipping and receiving.

The metal roof deck on steel purlins is covered by Fiberglas rigid insulation. Ventilators, fresh air intakes and manufacturing ovens are on the roof.

Ten sixty-foot-wide bays run the length of the plant. Partitions are concrete block and the aisles vary to suit layout. Storage areas are at both the receiving and shipping ends of the plant. The maintenance department is also in the plant area. Shop offices have metal partitions and ceilings.

Electric Power

Incoming power is supplied by two 44-kv lines from the Georgia Power Co. system. The main substation, located outdoors, has two 3750-kva transformers with automatic switching of incoming lines. Manual disconnect switches and motor-driven changeover switches have been provided.

Primary distribution of 4160 volts is carried by shielded neoprene jacket cables in underground ducts with metallic armored cable inside the building. Outdoor metal-clad switchgear has air-break circuit breakers and load break selector switches for primary selective network.

Network unit substations are

UPPER LEFT — Rear view of 250-ton Westinghouse centrifugal compressor used for office air conditioning.

LEFT CENTER — Coil winding section where six coils can be wound simultaneously and progressively on special winding machines. Rectangular wire for low-voltage coils is fed from spools on the balcony; round wire is fed from drumpaks mounted at the machine. In-floor tow lines bring wire from copper processing area, mold and insulation parts adjacent feeder sections, and deliver wound coils to test station.

LOWER LEFT — Tanks coming from fabricating line on powered roller conveyor, roll onto powered elevator, are raised and hooked to powered conveyor and dispatched to clean-and-paint line.

UPPER RIGHT — Copper-wire enamelling towers. One tower is for round wire; and two towers at right are for rectangular wire.

LOWER RIGHT — View of one of several similar automatic welding stations. Tank at left is rotated until locator hole is properly oriented.

mounted on platforms and over toilet rooms to conserve manufacturing floor space. The equipment includes eight 750-kva air-cooled network transformers with draw-out air circuit breakers.

The secondary network loop consists of two parallel runs of 600-ampere aluminum plug-in bus duct for the 480-volt three-phase, three-wire network. Power circuits are three phase, 480 volt; lighting circuits are three phase, 208/120 volts.

Ventilation

The plant is ventilated in conjunction with the heating system. Air conditioning is provided for processing in certain plant areas, and for comfort in the office area.

Dust and fumes are contained in each area by separating walls, and then exhausted to the atmosphere. Process exhaust is provided at required plant areas with draft curtains available to aid in containing the exhaust.

Fire Protection

The manufacturing area is 100-per cent sprinkled with a wet-pipe fire protection system, with one line of hose connections in the center of the plant. The office area is protected by means of hose connections, with hose and racks. Two 8-inch city water lines plus a 150,-000-gallon elevated storage tank will provide the water supply.

A loop system with hydrants and hose-houses around buildings is tied into the city supply and the elevated tank. Auxiliary fire fighting equipment includes fire extinguishers and CO_2 protection; plus a plant volunteer fire department.

Lighting

Three-phase, 30-kva dry-type transformers feed from 460-volt bus duct for lighting. Office areas have 50 foot-candles with two-tube fluorescent units. Illumination is greater in drafting areas.

Shop areas have 50 foot-candle illumination using 400-watt JHI fluorescent-mercury lamps. Outdoor lighting is achieved with JHI fluorescent lamps on street-light standards, and building-mounted floodlights.

Other Facilities

Plant service piping is provided with segregating valves and plugged connections to facilitate the installation of equipment.

Compressed air is distributed by a grid network, and gas goes by a loop system with branch lines to all gas-using equipment.

Domestic water is distributed to all toilet facilities and drinking water fountains, and a radial system sends cooling water to all process equipment that requires it.

Solution for Knotty Sewer Problem

OUR PLANT, like so many others the country over, is located near the edge of a small city which has long since outgrown its sanitary sewer system. As the city limits expand, the existing sewers are often extended and become inadequate both in carrying capacity and in depth.

This situation arose recently at our plant when we chose to expand our building facilities in an area more remotely located from the city sewer than our previous operations had been. We were not aware of it until after the contractor was well along with the building and endeavored to make the sewer tap and lay the connecting line. To realize adequate fall in a distance of 700 feet (leaving the new building site at a depth considered minimum) we were still sixteen inches below the city sewer at point of tap.

We faced a dilemma which in the end was to cost us more than had been anticipated. Fortunately, we have an association with a supply company, Texvit Supply Company, Mineral Wells, Texas, which is concerned primarily with problems connected with sanitary sewage disposal. They helped us in the selection of an "Ejector" sewage lift station which not only solved our immediate problem but has enabled us to remedy two other unsatisfactory sanitary sewer taps.

The system chosen for our job required that first a site had to be chosen alongside or near the city sewer. Then a suitable depth for a collecting sewer manhole was determined, into which any existing or anticipated sewer laterals might drain in accord with good plumbing practices.

Based on the known sewage disposal to be delivered, a packaged unit was sized to the requirement. This in our case was a 50 gpm unit.

The unit can be installed in a dry well or pit constructed in various ways to suit specific requirements. However, we chose to build a monolithic concrete pit with a depth only 2'7¾" below our collector sewer manhole. The "Ejector" unit was connected to the collector sewer manhole and to the city sewer with standard cast iron pipe and fittings.

The unit is very simple in operation and maintenance in that there are no working or moving parts except a small stationary air compressor similar to that found in any filling station. The controls are virtually trouble free, and the only connection to the other utilities is the power supply for operating a fractional horse power motor and controls.

The sewage flows through a check valve into a tank until a predetermined level is reached, at which time it is ejected into the city sewer by air supplied by the air compressor.

Our problem did not require much lift, but the same system is adaptable to practically any such sewage problem since only one pound of pressure is equivalent to approximately 2.4 feet of head in the water column.

Our sewer lift station silently works around the clock intermittently discharging our sewage into the city line. Thus, one more knotty problem is solved.

By LUTHER WADDY, Chief Engineer, Texas Vitrified Pipe Company, Mineral Wells, Texas.

NEWS FROM YARWAY



now!

A NEW YARWAY COLOR-PORT GAGE FOR MEDIUM PRESSURE BOILERS

The Yarway Color-Port Water Level Gage, so outstandingly successful on high pressure boilers, is now available in a new model designed especially for boilers operating up to *1050 PSI.*

Yarway Color-Port gives you all these *triple advantages:*

- *Two color readings*, brilliant and clear. Water shows green; steam shows red. A full gage is all green; an empty gage all red.
- *Low maintenance.* Servicing the Color-Port is simple as A-B-C. With gage remaining in place, individual cover plate assemblies can be inserted in a matter of minutes. Exclusive spring loading maintains proper pressure on glasses and gaskets at all times.
- *Increased operational time.* Yarway Color-Port Gages assure longer operational life, with a minimum of "time out" for maintenance.

Replace troublesome water level gages with the new medium pressure Yarway Color-Port—and for your new boilers, make sure the specifications read YARWAY COLOR-PORT. Visibility ranges of *13"*, *15½"* and *18"* available.

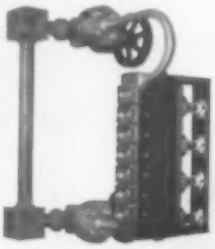
Free descriptive Bulletin WG-1815 on request.

YARNALL-WARING COMPANY

Home Office
116 Mermaid Ave., Phila. 18, Pa.
Southern Office
Bona Allen Bldg., Atlanta 3, Ga.



Complete cover plate assemblies can be replaced in minutes, with the gage in place.



Complete Color-Port assembly, with tie-bar column, Welbond Gage Valves and Yarway Illuminator.

YARWAY

For more information, use Reply Card—Page 87

189, 017,

Telegraphic Address
"CITYICE"

Telephone
No. 86879

THE CITY ICE & COLD STORAGE CO.,
12, GENERAL PATTER'S ROAD.
MOUNT ROAD.
MADRAS. 2
INDIA

18 August 1958.

Messrs. United States Hoffman Machinery Corpn,
Air Appliance Division,
103 Fourth Avenue
New York 3, N.Y.

RECEIVED
AUG 25 1958
GENERAL FOUNT

Gentlemen: Subject- Hoffman Centrifugal Blower
with motor-direct coupled
Frame No.4008- Type BBA
Serial No.1878-Size BL 20.

We are in receipt of your kind enquiry dated August 5,1958 regarding the working condition of the above blower and motor which were purchased by The City Ice & Cold Storage Co, Madras,2 sometime in 1937. Accordingly we take pleasure to report to you and certify as under:-

1. Ever since the installation in our factory the above blower and motor in 1937, that is for nearly 21 years now, the blower has given us perfect satisfaction without any complaint whatsoever.

2. During this long period of 21 years we never had an occasion to open even a bolt or nut for the purpose of cleaning the machine for for the purpose of looking in for any unsatisfactory working.

3. Beyond greasing the bearings regularly once every three months no further attention was ever needed of us; and no repairs, removal or replacement of any single part has been made.

4. The blower has been working all the 24 hours of the day for 9 months in the year, and for the rest 3 months it works 12 hours a day.

5. The blower and the motor (direct coupled) continues to be in the same original form since its installation in 1937 and we have never come across an efficient and long standing blower similar to this anywhere in the market.

6 Last but not the least, we strongly recommend this blower to ice manufacturers all over the world because it is very efficient, long standing and very economical in use.

Regarding the actual pictures of the unit in operation, we shall be attending to this aspect and send you photo copies in due course.

Thanking you for your kind enquiry,

Yours faithfully,
Hariman K. Irani
(Hariman K.Irani)

047 भार्ड्लन्*

without a single repair and still going strong!

* miles.

In many manufacturing plants, profit margins are dependent on a number of variables. Perhaps the most significant of these is the cost of materials, labor and *down-time.*

Output up-costs down

Where operating and production schedules depend on the unfailing delivery of clean, dry air or gas at constant pressure, Hoffman Multistage Centrifugal Blowers and Exhausters actually reduce costs, save materials and are free of down-time. For example, the Hoffman Blower pictured here has been in daily use for *22 consecutive years* without the need for repairs of any kind. Despite rugged climatic conditions, it runs its regular schedule of 24 hours a day nine months of the year and 12 hours a day the remaining three months. Over the 22 year period, it is estimated that the unit's impellers have traveled the equivalent of 395 trips to the moon and back, a distance of more than 189,017,047 miles.

Efficiency with economy

Economical operation with Hoffman Million Mile Blowers and Exhausters is assured since power is consumed only in proportion to the actual volume of air or gas handled. The absence of internal wearing surfaces and the lubrication of bearings in outboard mounted housings makes contamination of air or gas impossible. Pressure differential remains constant throughout the range of capacity and air flow is smooth, free of pulsation.



Cutaway view of Hoffman Blower.

Applications

The many production processes for which Hoffman Blowers and Exhausters provide clean, dry air or gas at constant pressure include:

- air squeegee for continuous liquid removal
- vacuum cleaning
- pneumatic conveying
- continuous drying operations
- agitation of plating solutions
- sewage and industrial waste treatment
- ore flotation
- oxidation of oil and asphalt
- combustion
- glass blowing
- raw water ice plants
- production washing of foods
- circulation of liquids
- gas blowers and boosters
- yarn drying
- wrapping, packing and stacking machines
- ejection of stampings from continuous punching machines

Free service

Hoffman Blowers and Exhausters are available in many standard sizes to meet the toughest service demands. Without cost or obligation, Hoffman engineers will provide objective recommendations on units to help reduce costs and boost profits in your plant. Send now for free brochure AB 104.

U.S. Hoffman Machinery Corp.
Air Appliance Division
103 Fourth Avenue
New York, New York

Occasional greasing was only servicing required in 22 years continuous operation.





For more information, use Reply Card—Page 87

MANAGEMENT CLINIC

Conducted by ROBERT H. EMERICK, North Charleston, S. C.

How to Determine Fitness for Promotion

Question . . . . . .

IS THERE any yardstick or standard available by which we can measure a man's fitness for promotion to a bigger job?

Our company was established about 40 years ago, and during the next 2 or 3 years we'll have to fill several key positions as the result of retirements. Although we'll lean heavily on the recommendations of our department heads, we certainly would like to pre-test or evaluate the likelihood of success for the selected individuals.

Such checking would be particularly desirable in two instances where our present tentative choices would promote men over others senior to them. The result we fear could be a dip in morale and some feelings of injustice being developed, unless we can support the selections scientifically.

Suggestion . . . . . .

WE DON'T KNOW of any method that can measure a man's likelihood of success with absolute certainly. Men have a propensity for rising to the needs of the situation; Abraham Lincoln is a wonderful example of how apparent mediocrity can become greatness when it has to.

However, there are a number of qualities which help an individual achieve success, and measuring the promotion candidates against the following list should develop valuable comparisons:

QUALITY	POINTS Yes	No
1—Does his knowledge of his present job bring respect from the people around him?	10	0
2—Does he lead rather than push?	13	0
3—Can he explain his ideas clearly?	10	—5
4—Does he place the safety of others above his own?	5	0
5—Keeps his head and emotions in control when under pressure?	15	—5
6—Does he have courage to admit mistakes?	8	—5
7—Does he gossip?	—10	0
8—Does he finish what he starts?	13	—5
9—Does he *want* to be promoted?	13	0
10—Is he good at making decisions?	13	0

NOTE: The negative values, when they are present, constitute a weakness in each case, and act as serious detractors from the individual's positive qualities. Especially, a man who loses his head and emotions under pressure, cannot hold the respect and loyalty of his subordinates. Nor can one who dodges the responsibility for his mistakes.

If the candidate's net total is 85 or above, his chances of justifying the promotion probably are excellent. From 80 to 85, good, but a lower total suggests some doubts. In any case, the list is helpful in naming those qualities which are highly desirable in a supervisor of any grade.

As for promoting an outstanding man over seniors who are less competent, it's being done all the time.

WHAT OUR CUSTOMERS *"Say"* ABOUT

Detroit ROTOGRATE STOKER Performance



Typical Detroit RotoGrate Stoker installation in a Midwestern Public Utility plant.
2 RotoGrate Stokers are installed under boilers of 200,000 pounds steam per hour capacity at 875 psig —910°F. TT—air for combustion 300°F.

Our field engineers get around—visit plants in all parts of the country and their reports tell us that users say their RotoGrate Stokers—

DO OPERATE with lower excess air—22% is common—less in many cases . . . Reason—the floating, self-adjusting air seals—a RotoGrate exclusive.

DO HANDLE load fluctuations easily . . . Sudden load increases picked up without loss of pressure—the thin fast burning fuel bed permits dropping load surges just as rapidly.

DO BURN all grades of bituminous and lignite coals, and many kinds of waste and refuse fuels . . . Ability to burn the less costly fuels available in any area is a potent factor in economical operation.

DO MAINTAIN uniform high efficiency in everyday operation. RotoGrate doesn't need special test conditions to show superior results.

DO SET a high standard of availability . . . A survey of users shows exceptional availability records in all kinds of plants.

DO OUTPERFORM other fuel burning equipment . . . Where it is possible to compare with other fuel burning equipment under similar conditions, operators almost without exception express preference for the RotoGrate.

DO SAVE . . . Low cost fuels—high efficiency—very little parasite power for operation—broad load ranges with uniform steam pressure—low maintenance—and not least important reduced production losses from outage . . . all contribute to savings that pay a handsome return on the investment.

DO YOU feel you can afford not to avail yourself of these advantages and economies for YOUR boiler plant? Why not write for bulletin 40 which describes the RotoGrate for boilers up to 400,000 pounds per hour capacity? Then let us recommend the correct stoker for your needs, without obligation of course.

Write **DETROIT STOKER COMPANY**
Main Office and Works, Monroe, Michigan
District Offices or Representatives in Principal Cities

8215

Some Observations at the 1959 American Power Conference

Reported for Southern Power & Industry
By A. D. HOLLAND
Professor of Mechanical Engineering
Georgia Institute of Technology



THE TWENTY - FIRST annual meeting of the American Power Conference was held at the Sherman Hotel in Chicago, Illinois on March 31, April 1 & 2, 1959. This Conference is sponsored annually by the Illinois Institute of Technology with eleven cooperating universities, five regional associated universities and nine cooperating engineering societies.

Approximately thirty-five hundred engineers were in attendance to hear ninety-three technical papers on: steam turbines, steam generators, water technology, industrial power plants, electrical transmission, hydroelectric possibilities, nuclear power, computers and network analyzers, etc.

Always a highlight of the Conference, the All Engineers Dinner was attended by thirteen hundred engineers this year. This dinner was presided over by Philip Sporn, President, American Electric Power Service Corporation. The speaker was Herbert D. Vogel, Chairman of the Board, Tennessee Valley Authority, Knoxville, Tenn. on the subject: Engineers Must Do Better. When one considers what a great advocate of "private power," Mr. Sporn is and what a great advocate of "public power," Mr. Vogel must be, the democratic policies of the American Power Conference meetings are apparent.

The southern section of the United States was well represented by the following technical papers:

1. Ultrasonic Testing of Large Steam Turbine Parts. L. E. Smith, Tennessee Valley Authority, Chattanooga, Tenn.

2. Example of Hydroelectric Development by a Private Utility. H. Neely Henry, Executive Vice President, Alabama Power Co., Birmingham, Ala.

3. Electrical Industrial Session, Panel Member, Norman Cutliff, International Harvester Company, Memphis, Tenn.

4. Experience with 110 Kv Bundle Conductor Lines. N. H. Erlandson, Transmission and Distribution Design Engineer, Carolina Power and Light Company, Raleigh, N. C.

5. Review of Hydro Potentialities — Southeastern States. E. S. Harrison, Vice President in Charge of Engineering, Southern Services, Inc., Birmingham, Ala.

6. Forward Planning for the Industrial Plant. R. W. Precious, Union Carbide Olefins Co., South Charleston, W. Va.

7. Forward Planning for the Industrial Plant. An Industry Viewpoint. H. R. Emery, St. Regis Paper Company, Jacksonville, Fla.

8. Thermal Density Currents and Their Utilization in Condenser Water Design. Rex Elder, Hydraulic Data Branch, Division of Water Control Planning, Tennessee Valley Authority, Knoxville, Tennessee.

MR. SMITH'S paper on Ultrasonic Testing discusses this method as one of the nondestructive tests available to an electric utility for use at the location of the equipment. He stated that its most logical application is that of internal flaw detection in metal parts that have only one surface available for application of the sensing unit, which is usually a vibrating crystal. Other applications involve the checking for thickness as a measure of corrosion and erosion.

E. S. HARRISON'S paper was given for the Southeastern States in a symposium on the nation's Hydro Resources. He presented a table showing that as of January 1, 1959 the total developed hydroelectric capacity in the seven southeastern states was 6,058,000 kw of which 2,430,000 kw had been developed by private utilities, 63,000 kw by industrial plants, 181,000 kw by non-federal publicly owned plants and 3,384,000 kw by federally owned plants.

Another table shows 5,900,000 kw of potential hydro capacity in this area, of which 810,000 kw is in the TVA area, and 1,080,000 kw under construction or license by private utilities, leaving a remaining capacity of 4,010,000 kw which might be developed by private utilities to help meet the expected peak loads in the next ten to fifteen years.

It was brought out that these peak loads only exist about six per cent of the time, or 10 hours per week and that hydroelectric capacity is especially well suited for carrying this type load.

THE PAPERS presented by R. W. Precious and H. R. Emery were part of a symposium on Forward Planning for the Industrial Plant. After hearing many papers on steam generators of 2,000,000 to 3,000,000 pounds per hour ca-

pacity and steam turbines of 400,000 and 500,000 kw capacity and even projected units of over 1,000,000 kw, it was rewarding to hear discussion in industrial plants of less than 30,000 kw and less than half a million pounds of steam per hour — pointing out that these smaller plants still have a definite place in the overall power picture.

When an engineer mentions an industrial power plant, most likely he refers to a manufacturing or process plant requiring both electric power and process steam. If only electric power is needed, it can usually be bought more economically; if only steam or heat in some form is needed, it may be obtained direct from low pressure boilers or some other heat source. It is when both electric power and process steam are needed in a plant that the design engineer has many possibilities as to the optimum cycle arrangement.

R. W. PRECIOUS spoke of the need for close coordination between the process engineer and the utilities design engineer, and equipment suppliers. He spoke of four factors that must be considered in the cycle design and selection of equipment: (1) reliability, (2) investment, (3) flexibility, (4) operating costs.

Mr. Precious brought out that cooling water, compressed air, steam and electric power may, in themselves, represent only a small portion of the actual cost of a final product; but who can say what the services are worth if they become unavailable and production losses are directly attributable to the lack of these services.

H. R. EMERY limited his discussion for industrial plants to the paper industry, stating that making pulp and paper was the fifth largest manufacturing industry in the United States. The industry is expected to grow at the rate of about 4% per year and the electric energy per ton of paper is also increasing, so that between 1957 and 1967 it is expected that the use of electric energy by this industry alone will almost double.

Mr. Emery introduced his paper, in a lighter vein, by stating that he had been hearing a good bit about plant efficiencies of 40% (large supercritical central generating stations). He said that he could report plant efficiencies of 80%. The trick is, of course, the manner in which the accounting department divides the cost of the electric energy and the process steam.

generator supplied with steam at 800 psig and 825 F was installed to exhaust into the existing 150 psig unit.

Dependability

To illustrate the importance of "dependability" of the power plant in the paper industry, Mr.

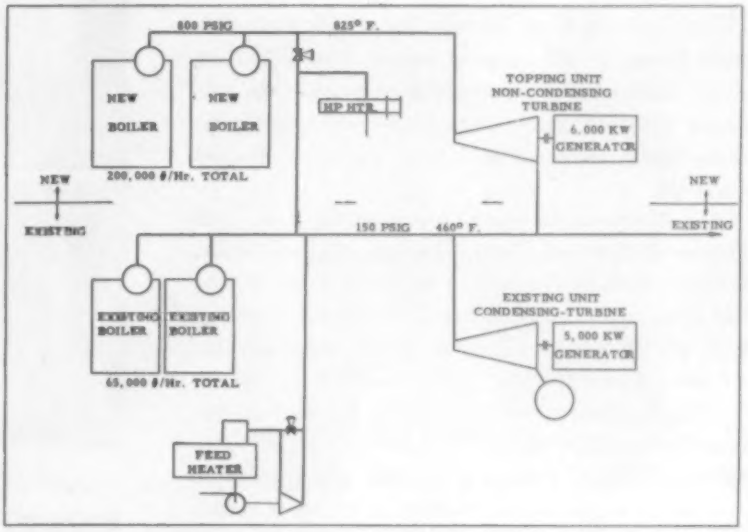


Diagram of economical topping installation.

He states there is little agreement in the industry as to the proper way to do this, and the wide range of methods used results in a great lack of uniformity in the reported costs per kwh generated.

This paper also discusses the desirability of adding a topping turbine to the existing plant as an economical way of meeting the expansion problem of an existing plant.

Figure 1, from Mr. Emery's paper, shows one such application, where a 6,000 kw topping turbine

Emery said that several mills were asked how much it costs per day if a major piece of their power equipment suffered an unanticipated, immediate shut down. In contrast, the return, or dollars saved on fuel costs, by an additional 1% efficiency built into the unit was calculated. The results are shown in the accompanying table.

It should be noted that one of these columns is per DAY and the other is per YEAR, and they show clearly the very high cost of unscheduled outage time, as compared with the effect of efficiency.

COMPARATIVE EVALUATION OF SHUT DOWNS AND EFFICIENCY

Mill	Cost per Day Shut Down	Return per Year for 1% Efficiency Increase
A	$41,000	$11,100
B	$33,270	$ 8,970
C	$11,070	$ 4,040

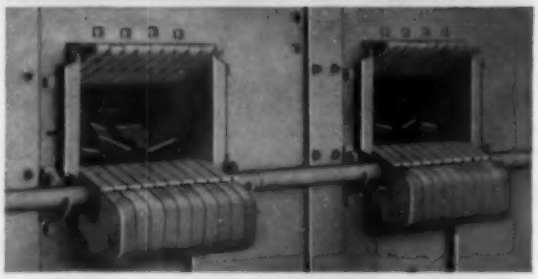
For Fuel Firing Versatility ...Low Cost Maintenance ...High Operating Efficiency

INSTALL

Riley Traveling Grate Spreader Stokers efficiently burn coals having a wide range of coking, caking, and ash fusion characteristics. High working efficiencies are produced with low grade fuels such a sub-bituminous coals, lignite, wood refuse, bagasse, and other cellulose materials.

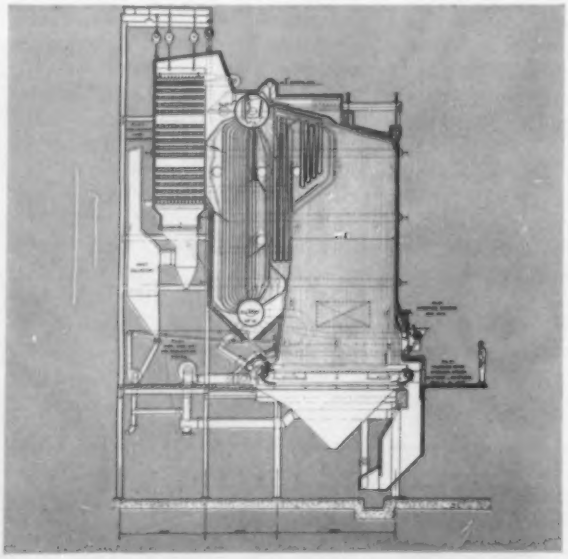
B. F. Goodrich, Champion Paper and Fibre Co., E. I. Dupont de Nemours, General Electric, Montana-Dakota Utilities, Gaylord Container, Utah-Idaho Sugar, Kennecott Copper, Swift & Co., Bendix Aviation, Armstrong Cork are but a few of many prominent companies that are using Riley Spreader Stokers under Riley Boilers. Such performance-proven installations as these substantiate the superior operating characteristics of Riley Spreader Stokers: uniformity of feed and distribution . . . complete, continuous combustion . . . low carbon loss . . . high day-to-day overall efficiency . . . long-term, low-cost maintenance.





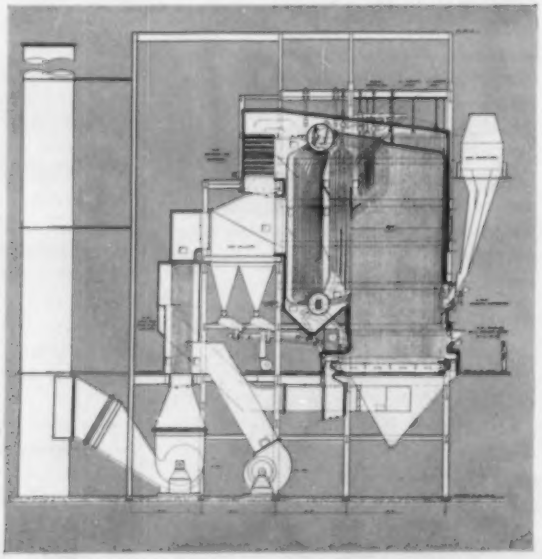
Two Feeder Models

Riley Spreader Stoker Model 'B' Feeders are supplied for capacities up to 200,000 lbs/hr; Model 'D' Feeders for boiler capacities over 200,000 lbs/hr have feeder drum in coal hopper which meters coal regardless of moisture. Adjustable distributor blades give uniform coal distribution.



In Combination With Natural Gas Firing
Deere & Company, Moline, Ill.

20' x 16' Riley Traveling Grate Stokers equipped with Riley Model 'B' Feeders fire two complete Riley Steam Generating Units with pressurized furnaces. Riley Intertube Gas Burners fire natural gas as an auxiliary fuel. Capacity 135,000 lbs/hr, 750F, 650 psig. Efficiency 84.8%.

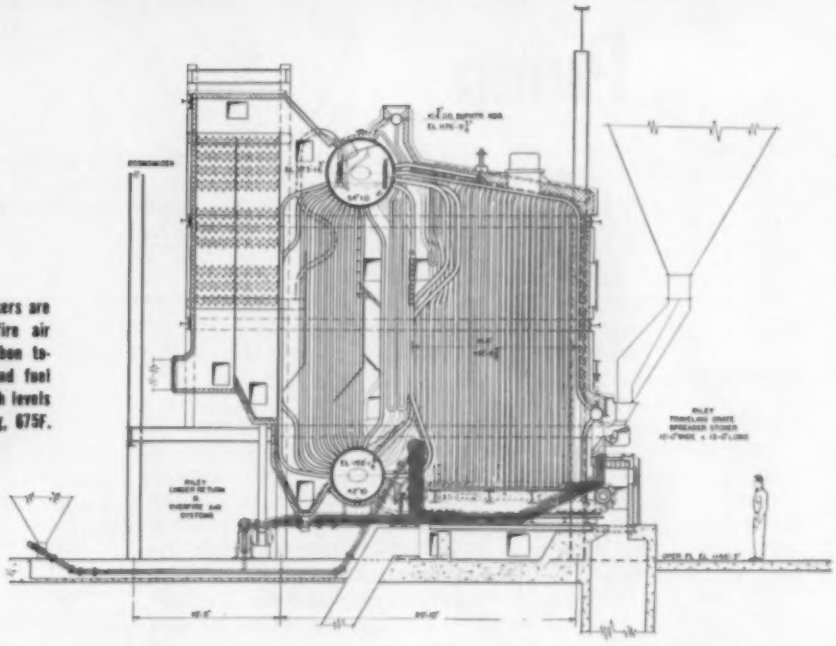


Simultaneous Bark and Coal Firing
Marathon Southern Corp., Naheola, Alabama

A 28' x 22' Riley Traveling Grate Spreader Stoker, fed by Riley Model 'D' heavy-duty Coal Feeders and Riley Pneumatic Bark Distributors, fires this 300,000 lb/hr Riley Steam Generating Unit with an efficiency of 85%. 975 psig, 825F.

RILEY SPREADER STOKERS

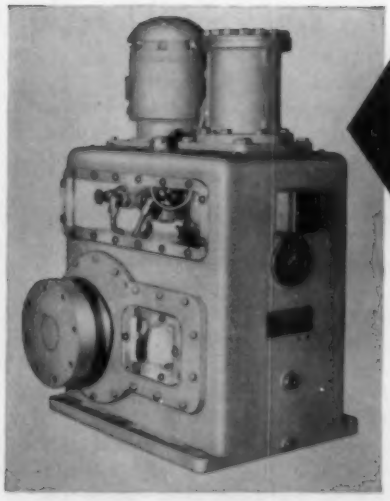
With Either Traveling, Oscillating, Dumping or Stationary Grates



Cinder Return And Overfire Air System

Pennsylvania Railroad, Juniata Shops, Altoona, Pa.

Many Riley Traveling Grate Spreader Stokers are equipped with cinder return and overfire air systems. High recovery of unburned carbon together with intimate blending of air and fuel assures a wide range of operation at high levels of efficiency, 3 — 60,000 lb/hr, 600 psig, 675F.



Smooth, Continuous Operating Hydraulic Drive for Traveling Grates

The self-lubricated Riley Hydraulic Traveling Grate Drive power unit operates quietly and smoothly with uninterrupted continuous automatic or manual speed control from stop to full load. The design does away with sprockets, chains or gears. A pressure gauge describes load conditions at all times.

High Efficiency Grate Surface

Providing high efficiency with low maintenance requirements, the surface of the Riley Traveling Grate Spreader Stoker has small (2" x 6") overlapping grate clips, of special heat-resisting alloy. Nose-over-tail design forces clips to separate when starting return travel, freeing themselves of ashes and clinkers. Tuyeres in the center and at sides of clips give uniform air distribution.



A careful survey of your plant by a qualified consulting engineer could show ways of making substantial savings in power costs.

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Centrifugal Pump Clinic

QUESTIONS & ANSWERS — Conducted for SPI readers by **Igor J. Karassik**, consulting engineer and Manager of Planning; and **W. C. Krutzsch**, assistant chief engineer of the Harrison Division, Worthington Corporation.

Question . . .

I WOULD like to refer to a statement which has appeared in a number of articles on centrifugal pumps and which deals with the effect of cutting down the impeller diameter on the capacity and head produced by a centrifugal pump. It is stated that for similar points on the characteristic curve, the pump capacity will vary directly as the impeller diameter, while the head will vary as the square of this impeller diameter.

This statement seems to be contrary to general belief. I should like to point out that the discharge (or capacity) varies as both the area and the velocity. Reducing the impeller diameter would reduce both the area at the impeller exit and the velocity. Should not the capacity, therefore, vary as the square of the impeller diameter instead of directly as this diameter?

Answer . . .

THE FUNCTIONAL relationship between a change in impeller diameter and the resulting change in capacity may be readily established in either of the two following ways:

1. Empirically, by analysis of actual test results, or
2. Theoretically, by comparison of discharge velocity triangles or other analytical means.

In either case the results substantiate the fact that capacity varies directly with change in diameter, subject to slight variations which will be discussed later.

Considering the empirical approach first, the substantiating evidence lies in literally thousands of tests which have been made and are still being regularly conducted by both pump manufacturers and pump users. While a review of any substantial number of such tests covering a wide range of different pump types would undoubtedly turn up some designs which would indicate a capacity change greater than that expected, it would also reveal some showing a smaller change than expected. But on the whole such tests indicate that the large majority performed very closely in accordance with the rule that capacity varies directly with diameter.

So far as theoretical proof is concerned, there would probably be little value in and even less need for a complete theoretical expansion in this column, since this can be readily found in textbooks on pump design. However, we would like to comment briefly on your statement regarding reduction of discharge area with reduction of impeller diameter.

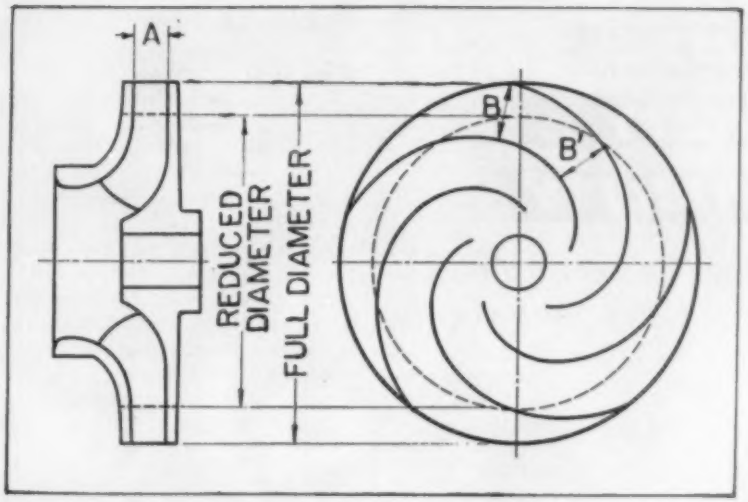
Assuming for purposes of discussion a radial flow, closed impeller with parallel shrouds, it is obvious that *circumferential* area is reduced in direct proportion to any reduction in impeller diameter. However, this area does not represent the effective discharge area of the impeller and, therefore, does not exert the principal controlling effect on pump capacity.

If such an impeller is considered as a series of rotating flow channels (each channel being formed by the upper side of one vane, the under side of an adjacent vane, and the inside surfaces of the shrouds), it is then apparent that the *effective* discharge area is equal to the normal area between any two vanes times the number of vanes.

Referring to the accompanying illustration, this area is represented by A x B for full diameter and by A x B^1 at the reduced diameter. In most impellers these two areas will remain very nearly or exactly the same for the range of diameters over which the impeller is normally applied. Since this area remains constant, capacity then varies only as velocity or, in other words, directly with impeller diameter.

The fact that variations from this rule are sometimes observed during pump tests does not in any way detract from its validity, but rather points up the variations and limitations encountered in practical pump designs.

For example, the necessity for obtaining special characteristics of pump performance such as an un-



usually flat or unusually steep characteristic curve may sometimes force the designer to distort the impeller areas or configuration from the optimum, thus affecting similarity relationships.

In addition, internal losses in a pump prevent us from measuring the performance of the impeller itself, and influence overall performance to greatly different degrees in different designs. These, and a number of other similar factors, all serve to illustrate why deviations from the general rule are to be expected.

Hints on Threading Stainless Steel

WITH THE ever increasing use of stainless steel in industry more and more mechanics are learning that the art of threading this material frequently involves them in a bit of difficulty. The metal is physically different from ferrous stock and as such does require somewhat unusual techniques to produce good, sharp threads.

First of all one must look to the condition of the pipe vise in use since much more gripping power is needed to hold against the extra effort required to turn die stocks on stainless steel. It may be necessary to strengthen the vise bench for the new service and to make sure the vise is equipped with stout, rugged jaws. If the vise has seen years of usage, it may be necessary to file the teeth to make sure of their holding qualities.

Ratchet dies are not recommended for this service since their improved ease of operation tends to cause a speeding up of the thread cutting operation, with resulting poor threads. The smooth, steady motion of two-handled die stocks produce excellent results if all other conditions are right. Power driven dies make short work of the otherwise laborsome job. A new model recently placed on the market is light, compact and readily portable since it is readily powered with any ¾ hp electric drill motor.

Since the stainless stock is plenty tough, we cannot produce acceptable threads with ordinary carbon steel dies. Only high speed steel will do a satisfactory job. These can be had in the solid, segmental or adjustable types as one may prefer. They work best if provided with a three to five thread lead as compared to the customary two or three threads of ordinary dies.

Failure to use the right equipment results in torn roots in the threads cut. Twenty to 25 degree lip rake angles are required for chromium nickel grades, and 5 to 10 degree is about right for straight-chrome grades to minimize seizing and galling. Fifteen to 20 degree angles are recommended for hook grind of the chasers.

Work hardening and glazing of the metal results when the dies are permitted to become dull through long use. Rough, torn threads are other manifestations of a lack of good, keen cutting edges. Considerably more power is required to rotate dull dies. Unless ample space is provided in the dies to discharge chips, these will pack up to cause roughing of the new thread.

As the regrinding of the dies requires the services of a top-flight machinist no other should attempt the work. The slightest inaccuracy results in hard operation of the dies with subsequent poor quality of threads on the finished stock.

Avoid the mistake of cutting threads in stainless steel too fast or in a spasmodic manner. Cut the threads at approximately one-half the speed ordinarily needed for carbon steel and perform the work with a steady rythmic motion. Watch for the condition known as "drag" caused by the clinging tendency of the tough cuttings to stick to the newly cut threads.

Too much speed also results in heating the dies to a degree where the cuttings tend to "friction weld." In other words to form a mass of metal that clogs the teeth in the dies. Aggravated conditions of "loading" the dies may cause them to break. The answer is slow, uniform speed of cut, and plentiful use of the right grade of oil.

Sulphurized oil containing a percentage of animal or vegetable fat is the best type for cooling and lubricating stainless steel cutting dies. Should the oil require thinning, as for the finer cuts, use paraffin oil. If the threading is done in power dies or lathe where the oil is recirculated, be sure that frequent straining removes all the foreign matter.

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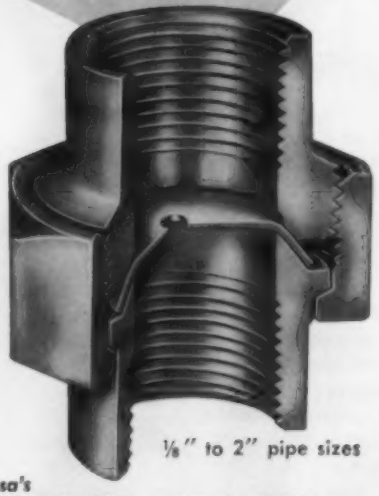
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Just specify *"Catawissa Cup-Orifice Plates"* or *"Catawissa Cup-Orifice Unions"* at your favorite supply store— or write direct for catalog and complete information.

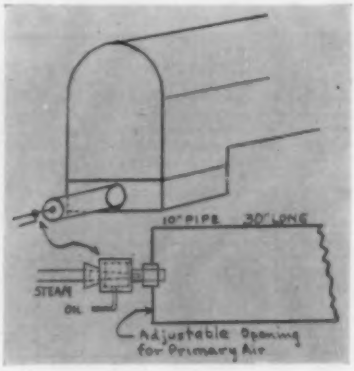
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Mixing Chamber Aids Combustion

PRE-MIXING chamber improved fuel combustion, eased firing load and reduced maintenance costs.

Locomotive type oil field boilers were being fired with a heavy crude as this was the only fuel readily available. Considerable difficulty was encountered, many different burners were tried and results were disappointing.



Fuel heaters to raise temperatures were installed, and these helped but still the problem existed. The fire boxes were continually in need of repairs, because of blistered surfaces, loose staybolts, and loose tubes.

We determined that the fuel did not ignite readily and as a result the combustion did not occur in all of the available space. We tried what appeared to be a simple solution — moved the burner out so that the fuel ignited and combustion started as soon as the fuel air mixture entered the fire box door. To provide a "mixing" space a piece of pipe was utilized as shown in the accompanying sketch.

The result were far above our expectations, the fuel began to burn when it entered the combustion chamber, steam pressure was smoothed out, maintenance costs were reduced by over 50% and boiler availability was increased. Another example of a "big" expensive problem with a simple low cost solution.

By L. J. CORMACK (La.)



Be Right . . . Buy Bearings By ALL the Numbers . . . from Dixie Bearings, Inc.

It is not enough to buy bearings by the bearing number alone! Those prefix and suffix numbers often determine bearing success or failure. Cost, too, is determined by those numbers for they show degree of precision, internal clearance and the amount of preloading.

How can you always make sure you get the right bearing for every application? It's simple! Contact our nearest branch and we will deliver bearings in the manufacturer's original sealed box. Every bearing is guaranteed by the maker and ourselves to be as specified on the box. Each bearing will be "factory-fresh" to give you best possible performance and life. Our representatives are qualified to assist in determining correct precision and fit on all bearings in your equipment.

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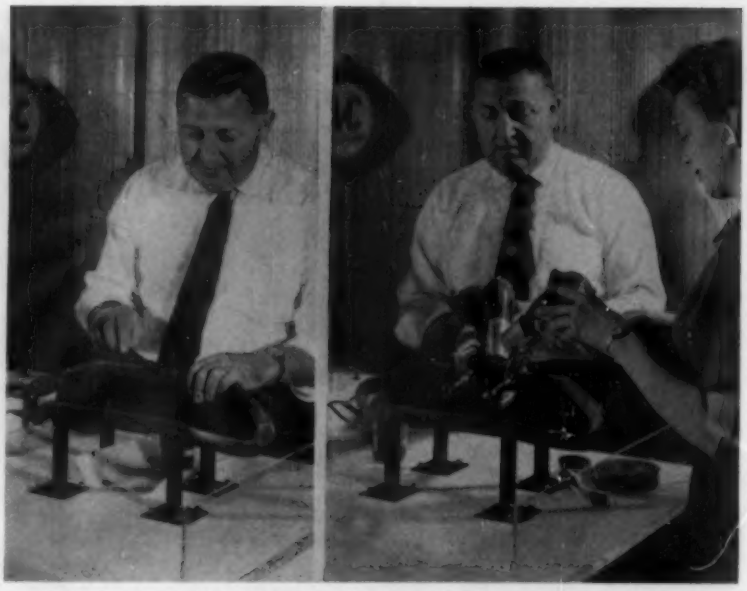
Damaged Coils Repaired In Few Minutes

DEMONSTRATING the simplicity and ease of silicone rubber motor insulation repair, the Allis-Chalmers representative shows that in a matter of minutes, damaged motor coils can be repaired and ready for installation.

A technique about as difficult as vulcanizing a tire patch, the repair demonstration included application of silicone-rubber paste, building up coil wall thickness to original dimensions with silicone rubber tape, and vulcanization with a stream of hot air.

To prove out the effectiveness of the repair, the entire coil was immersed in water and 10,000 volts applied to its conductors. To show the voltage stresses at the terminals, a flashing electric arc jumped across a horn gap.

The repair technique demonstration points out the unique capabilities of Silco-Flex all-silicone rubber insulating systems for motor and generator stator coils. Emphasis is on ease of maintenance — considerably simpler and faster than the old practice used with taped and varnished coil systems.



The demonstration shows application of silicone rubber paste to damaged part of coil. Paste is free-flowing for complete coverage, bonds itself immediately to metal. At right, silicone rubber tape is used to build up coil wall thickness to original dimensions. The "patch" is then vulcanized to the rest of the coil insulation with hot air dryers.

Piston Rods Metallized

AT THE FRITCH, Texas, station of Natural Gas Pipe Line Company, gasoline hydrocarbons are extracted from the gas which is then transmitted under high pressure into a north-bound pipeline. In an operation of this kind problems of wear on reciprocating or rotating machine elements, plus corrosion, can be major in character.

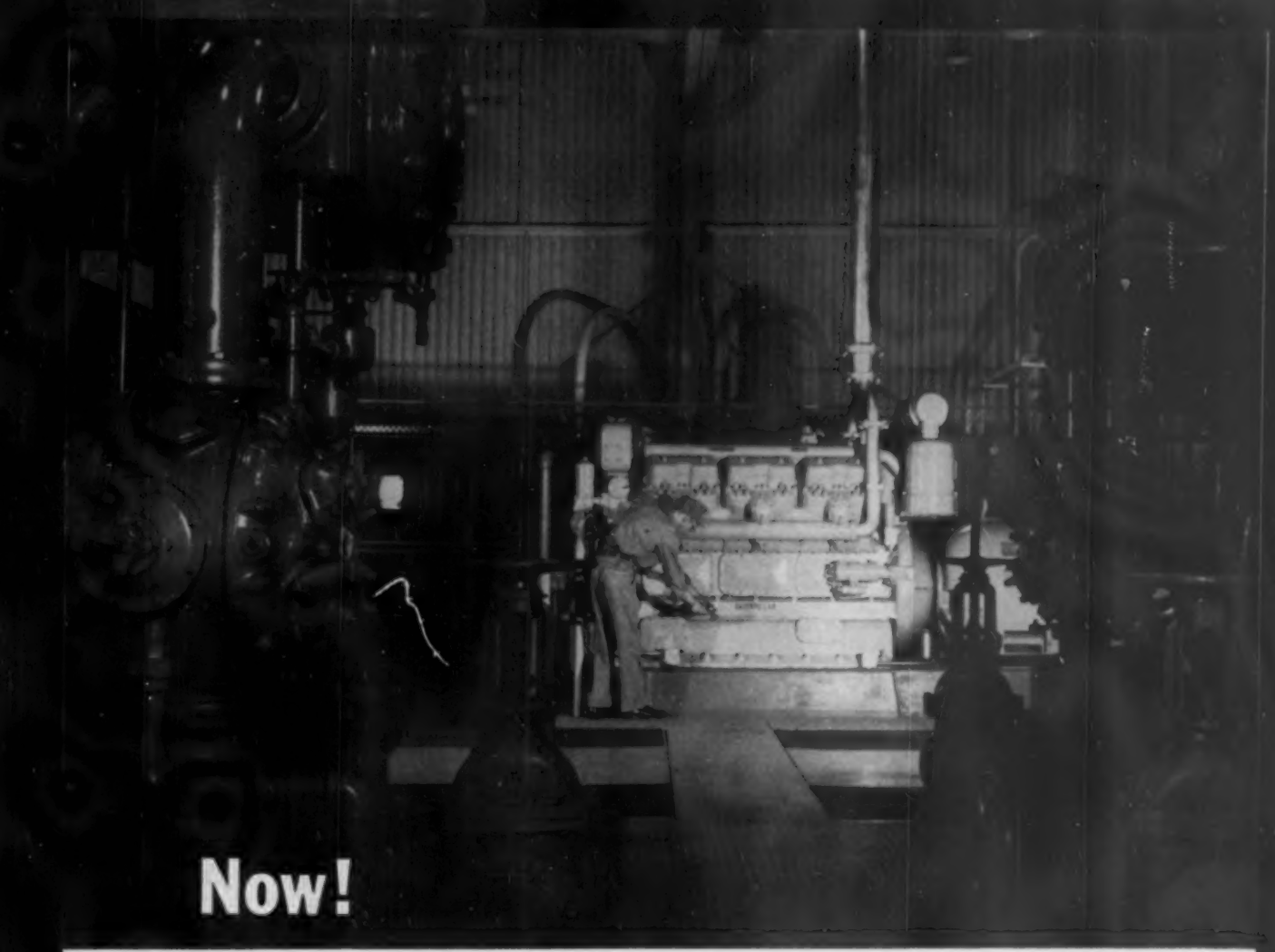
At this station there are fifteen large compressors each of which has four power piston rods. A new rod costs about $2,000. When worn beyond tolerance they are now metallized at a cost of around $90.

This means that the station can add up a savings of over $1,900 on each job, performed right in their own shop by station personnel. They merely rough thread, apply Sprasteel 80 and grind finish.

These rods, which are thirteen feet long and seven inches in diameter, are their biggest problem according to Chief Machinist T. H. Smith who says, "If we weren't able to metallize we'd have to junk them and get new ones. Incidentally, I've never seen sprayed metal rods gall."



Spraying Sprasteel 80 on large gas pipeline power piston rod. The saving will be nearly $2,000 and the metallized part will last longer than a new rod.



Effective auxiliary equipment maintenance requires no more than 4 lubricants

Get important reductions in inventory and maintenance costs with Texaco Organized Lubrication

A small group of multi-purpose lubricants, organized by Texaco into a simplified plan, is rapidly replacing numerous specialty products in auxiliary power equipment applications.

As a result of this plan, inventory is cut sharply; storage space is saved. Misapplication dangers are substantially reduced. Lubrication rounds take less time—labor costs go down.

A Texaco Lubrication Engineer will be glad to tell you how the Organized Lubrication Plan can help you cut maintenance costs in your plant. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write:

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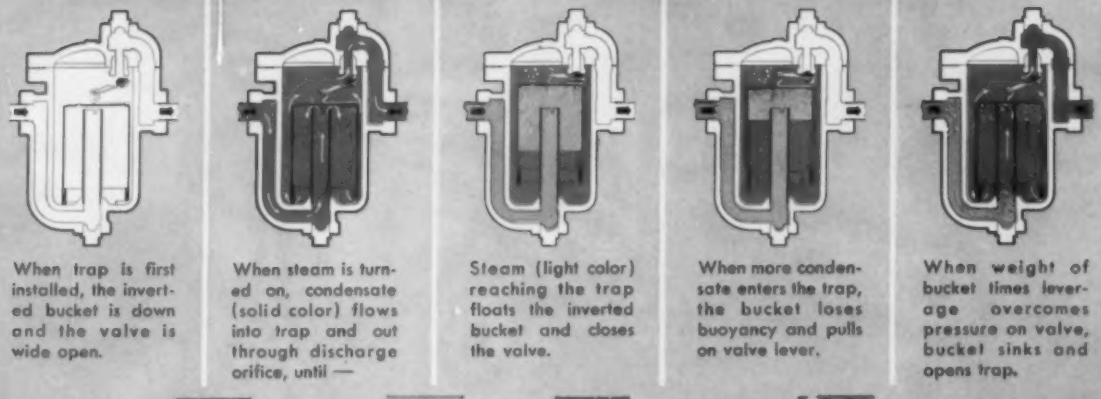
Texaco Inc., 135 East 42nd Street, New York 17, New York.



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(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

This simple trap operating principle provides the efficiency, dependability and freedom from maintenance necessary for the most profitable use of steam



When trap is first installed, the inverted bucket is down and the valve is wide open.

When steam is turned on, condensate (solid color) flows into trap and out through discharge orifice, until —

Steam (light color) reaching the trap floats the inverted bucket and closes the valve.

When more condensate enters the trap, the bucket loses buoyancy and pulls on valve lever.

When weight of bucket times leverage overcomes pressure on valve, bucket sinks and opens trap.

Key: condensate steam steam bubbles air bubbles

ARMSTRONG INVERTED BUCKET STEAM TRAPS

are designed and made to give you these big benefits:

Armstrong Traps, the first inverted bucket steam traps, now represent the most advanced development of this time-proven principle. They provide all the advantages necessary for efficient, economical condensate drainage from virtually all types of steam using equipment.

1. *No steam loss* – Steam never reaches the orifice even when there is no condensate load.
2. *Automatic air elimination* – Vent in trap bucket passes air and other non-condensibles through to be discharged with condensate.
3. *No cooling leg required* – Condensate is discharged at steam temperature as fast as it reaches the trap because trap operates on difference in density between steam and water not on temperature.
4. *Operates on any back pressure* – Failure of one trap in system will not cause others to open because high back pressure does not affect an Armstrong trap other than to reduce capacity. As long as there is a pressure differential across the orifice the trap will close on steam and open for condensate.
5. *Unaffected by ordinary dirt* — Swirling action of condensate keeps dirt in suspension until discharged with condensate, prevents it from lodging in valve.
6. *Completely dependable* — Proved design plus the use of all stainless steel working parts assure continuity of service and length of service unmatched by any other trap.
7. *Big capacity in a small, economical package* — Armstrong design gives you the highest practical capacity for any given pressure. And remember, Armstrong capacity ratings are based on *hot* condensate at the *working pressure differential* stated, not on theoretical orifice capacities.

Further information on these advantages plus much additional information is given in the 48 page Armstrong Steam Trap Book. Ask your local Armstrong Representative or write direct.



860 Series for low pressure heating service.



800 Series, side inlet, side outlet.



No. 801, side inlet, bottom outlet.



880 Series, integral strainer.



200 Series, bottom inlet, top outlet.



Forged Steel Series for high pressures, high temperatures.



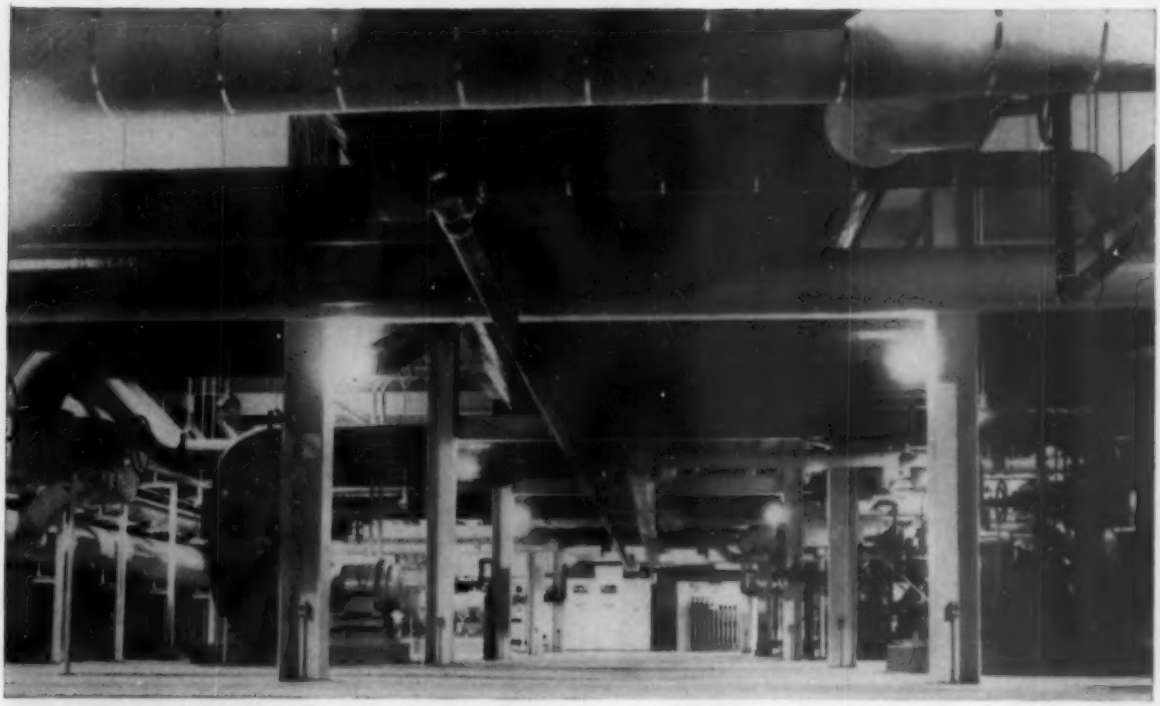
The 48 page Armstrong Steam Trap Book tells how to correctly size, install and maintain steam traps for any pressure, any temperature, any load plus full catalog data on Armstrong Steam Traps. Ask for Catalog K.

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Architects and Engineers: Lane, Gamble and Associates; General Contractors: Robert E. McKee, Inc., and J. E. Morgan and Sons; Heating and Plumbing Contractors: Kieffer Plumbing and Heating Co., and Sam P. Wallace and Co.; Mechanical Engineers: Blum and Guerrero, and William K. Hall and Co.

. . . and its heart

THIS IS EXCHANGE PARK IN DALLAS, TEXAS—a 125-million dollar commercial development of five multi-story office buildings, a regional shopping center, a hotel and a complete medical center.

Over 300 tons of USS National Seamless Pipe in sizes from 2⅜" through 24" were used in the heating and cooling system which serves the center from a utility plant. Steam at 250 psi working pressure is generated in the utility plant by five 50,000-pound boilers whose combined steam capacity is 250,000 pounds. This plant also has a refrigeration capacity of 12,000 tons, supplied by a system capable of handling close to 34,000 gallons of condenser water per minute, and is capable of meeting the needs of a city with 36,000 people.

Do you need quality pipe for power, heating and air-conditioning installations? You'll get it when you ask for "NATIONAL PIPE." If you'd like further information or immediate assistance with your pipe problems, write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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USS National Tube Division of United States Steel

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"The world's largest and most experienced manufacturer of tubular products"



Corrosion in Chilled Water System

IN 1955, Rich's, Inc. of Knoxville, Tennessee, erected a new building which they moved into on August 29, 1955. During construction of a tunnel to a parking garage, rains washed considerable mud into the area and a sizable amount of the water and mud found its way into the piping of the chilled water system of the air conditioning equipment which was being installed at the same time.

When the equipment was put into operation in August, 1955, no treatment was used nor was any started until August, 1956. During this time when no treatment was used, the strainers (one of which is shown in the photograph) had to be frequently cleaned since otherwise they would be completely filled with a deposit.

This deposit was assumed to be mud, and it seemed to their personnel that it took an exceptionally long time for the mud to be caught by the strainers and completely removed from the system.

During the summer of 1956, one of our representatives outlined to their engineering department the type of service and controls that we had available for protection to all of their equipment through proper treatment. In the course of explaining this program, the strainer shown in the picture, was presented for examination. Analysis of the deposit showed it to be not mud but iron oxide. The upper part of picture shows a magnet with some of the deposit adhering to it. The second picture shows water from the chilled water system. The left hand sample collected on August 8, 1956, is very high in iron oxide as can be seen by the color of the water. The sample collected August 25 shows water from the same system completely free of rust.

A treatment program was established on August 10, 1956, at which time adequate chemicals were added to the chilled water system to completely stop all rusting and afford protection to the metal. The sample on the right shows the clear water produced as the result of the chemical treatment program in just 17 short days. This system was not drained or flushed but rather this is the same water showing how rapidly corrosion was halted and how fast the water cleared up.

A normal question might be, "What happened to the iron oxide?" The coils of the chilled water system are so designed that chilled water enters the top on one side of the coils and leaves at the top on the other side of the coils. Consequently, since iron oxide is heavier than water, the iron oxide settled in the bottom of the coils. They acted as a natural trap.

During the winter of 1957 and 1958, several of the coils froze and burst. During the course of repairing the coils, the existing iron oxide deposits were flushed to relieve the system of the old iron oxide deposits.

Since the inauguration of the closely controlled treatment program, the water in the chilled water system has remained as shown in the sample on the right. Periodic tests by our field engineer determined the quantity of treatment necessary and the desired frequency of application. Thus, the system is kept free from the corrosion. The ferrous metal in the system is under complete protection and will be as long as adequate controls are maintained.

Many people feel that a closed chilled water system requires no treatment since it may contain a large quantity of brass or copper coils, piping, etc. However, any ferrous metal in the system, as is illustrated here, suffers attack from the dissolved oxygen in the make-up water. Over a period of time this can be very costly indeed.

In this particular instance, the corrosion was arrested before any apparent serious damage occurred since no replacement of the ferrous metal construction has been necessary up to this point.

Treatment of closed water systems is relatively inexpensive due to the small volume of make-up water required for most systems and the small amount of treatment required. The treatment protects the equipment and permits maximum operating efficiency. It also prevents certain areas from acting as natural traps for collecting and holding iron oxide deposits, reducing cooling in given areas.

By CLYDE A. FARRIS, JR.
Water Services, Inc.
Knoxville, Tenn.



UNIVERSAL NUT WRENCH — Whenever an outside wrench is needed, we heat and bend a piece of sheet steel around the nut to shape it to fit, and then weld a handle across it. — *S. Clark, East Bradenton, Fla.*

Atlanta Gas Company Solved Insulation Problem for

Refrigerated Propane Storage

WHEN the Atlanta Gas Light Company decided to expand its propane peak shaving facilities, they and their engineers, Stone & Webster, settled on refrigerated storage in order to liquify the gas and save the high equipment costs of pressure storage.

The principal advantage of refrigerated storage is economical use of steel. The first tank used 100 tons of steel. To provide this storage in pressure tanks would have required some 48 tanks weighing over 1,800 tons. Installed cost of the first tank, including the associated refrigeration equipment, was about $550,000. Pressure tanks with the same capacity would have cost about $1,130,000.

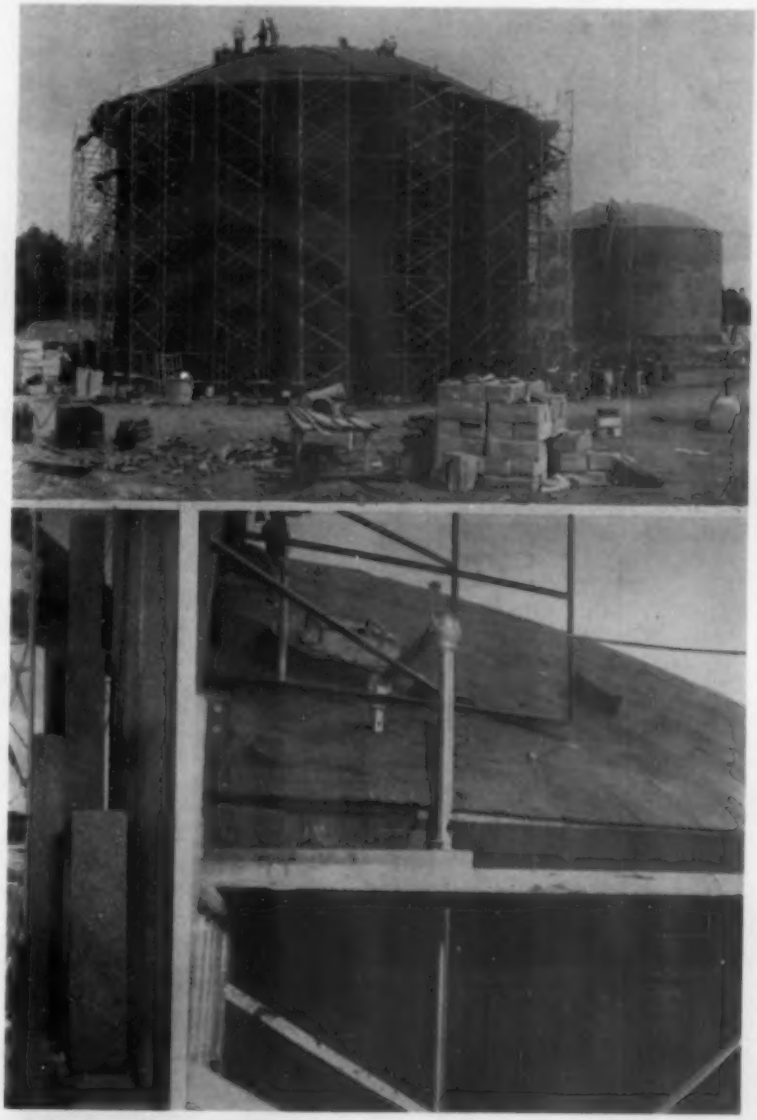
Thus, refrigerated storage cut costs by one-third, but one of the problems they faced in this unique installation was how to insulate the huge tanks.

The major obstacles were these: 1. The insulation could not be fastened directly to the tank since, when the tank was pulled down to its —46 F operating temperature, the contraction would pull the tank walls away from the insulation. 2. The insulation must be impervious to vapor and moisture to prevent condensation between the insulation and the tank.

Their unusual solution was to construct a free-standing wall of cellular glass insulation blocks around the tanks, but not touching them. The wall was of two layers — one of 4-inch thick blocks and a second of 3-inch thick blocks — and was laid up to form an outer cylinder of insulation around the tank, separated from it only by a small air space. Since the cellular glass has high compressive strength, it was possible to build a self-supporting wall. Also, the glass is impervious to moisture and vapor.

Seven inches of Foamglas also were used on the roof. Two layers of 4-inch thick blocks were used under the tank. The strength of the material allowed it to be used to support the weight of the tank.

North Brothers, Inc., of Atlanta was insulation contractor, and the Foamglas insulation material was produced by Pittsburgh Corning.



The most unusual design feature is the self-supporting wall of insulation at lower left. Also note provision for expansion between wall and roof at right.

Cost Reduction for Air Conditioning Maintenance

IN A SOUTHERN textile mill where synthetic spun yarn is manufactured, we have air conditioning with refrigeration.

Case 1

There are two compressors — one fifty horsepower, one seventy-five horsepower. These machines are used to control conditions in the spinning department. Bad quality yarn and lower efficiency will result if humidity and temperatures are not controlled properly.

These compressors are started for the season about the middle of May and run until the middle of October. In May, 1958 the compressors were started and after approximately two months of operation the oil pressure dropped thirty pounds below normal on the seventy-five horsepower compressor.

After a thorough inspection, no visible cause could be found, and the compressor was put back into operation. The oil pressure continued to drop slowly. It was decided to tear the compressor down for inspection. This was done and the front cover bearing had frozen on the crankshaft and started turning in the bearing housing. The bearing housing was worn so large that it was impossible to replace the bearing.

The service department of the compressor manufacturer in this section was called for information as to what could be done for repairing the compressor as quickly as possible. We were informed that the only thing that could be done was to replace the compressor with a new one at a cost of $950. The earliest shipping date that could be promised was thirty to sixty days.

Since the spinning department is located on the second floor and the heat and high humidity experienced at this time of year are unbearable, it was necessary to get the machine back into operation at once.

Mr. J. T. Flowers (who is employed by Bayliff's Radiator Service in Graham, N. C. and has been rebuilding air compressors and automobile engines for thirty-five years) was called in to see if he could repair the compressor. After examining the worn bearing housing he said he could use an engine block boring machine and bore the housing out one-eighth inch and make a cast iron sleeve and press it into the enlarged bearing housing and make the inside of sleeve to fit the front cover crankshaft bearing.

We gave him the go ahead and in two days' time he had the compressor body ready for us. His bill was $162. We reassembled the compressor and started it up, and the oil pressure went up to normal pressure. This compressor was operated for three months after this and the oil pressure did not drop one pound.

One hundred and sixty-two dollars against nine hundred and fifty dollars is quite a savings. A lot of refrigeration compressors can be repaired without such high costs as are charged by some of the repair shops.

Case 2

We seemed to be plagued with compressor breakdowns this past summer. A few days after the first breakdown, one of our one hundred and fifty horsepower compressors in another department broke down.

The machine was operating normally at the end of the second shift. The compressors are operated twenty-four hours a day and are unattended from 11:00 p. m. until 7:00 a. m. When the first shift attendant came on duty and checked the compressors, he found that one machine was not operating. After an inspection to determine the cause, it was found that the entire compressor was frozen up.

We opened up the crankcase cover and the oil sump was empty. On further examination, we found that the connecting rod crankpin bearing had frozen on the crankshaft, the pistons had run hot and expanded and were galled to the piston liners.

The distributor for this area was called and a service man was sent to look at the machine. We were told that all new parts would have to be put in, which amounted to a complete overhaul job at the cost of $3,000.

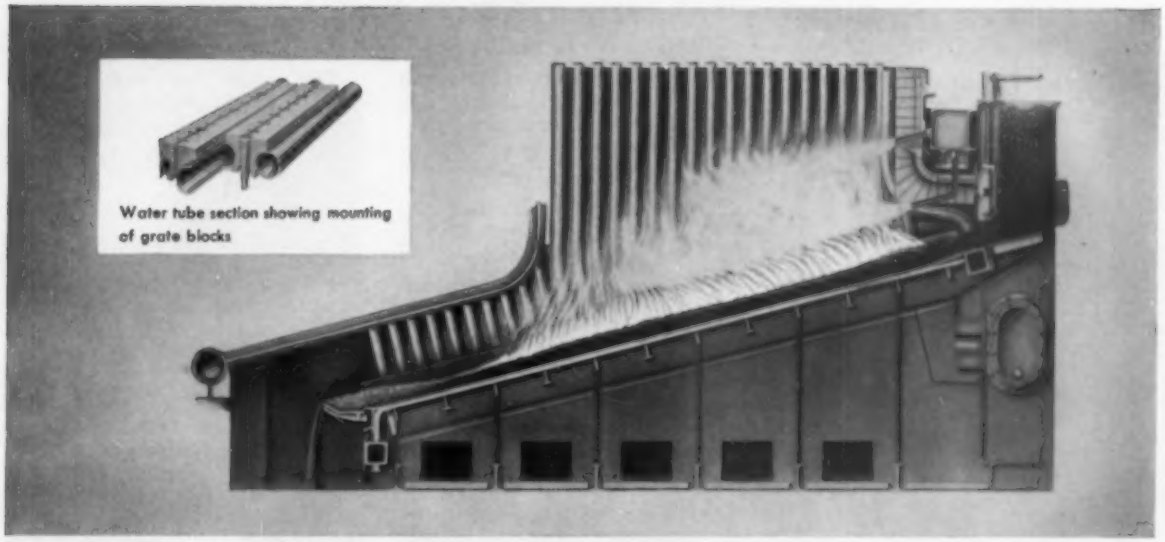
Mr. Flowers was again called in to see if he could help us out. He informed us that the crankshaft could be rebuilt, the pistons would have to be expanded twenty thousandths of an inch since the cylinder walls were worn that much and over size rings could be installed on pistons, the cylinder walls could be honed and the connecting rod journals could be cut down enough to make the crankpin bearings fit properly on the crankshaft.

He reworked all the parts and returned them to us. We reassembled the compressor and ran it seventy-two hours without "Freon" in the compressor. The machine ran as smooth as a new one. The oil pressure was normal and did not drop during the test run. We did not get to operate the compressor the past season but feel sure it will operate perfectly. The bill for this job was $547.

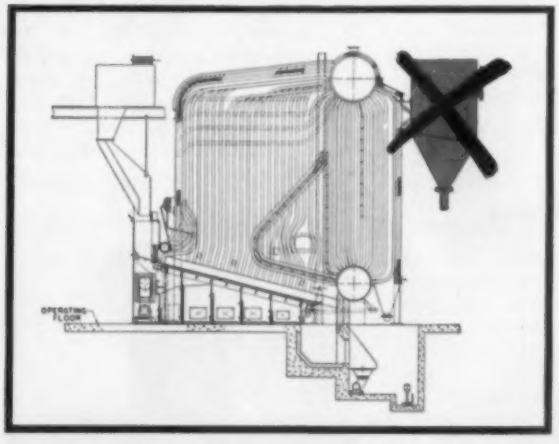
This is a flooded type machine. The cause of the failure was that all the oil was trapped in the evaporator and failed to return to the crankcase. When the oil was drained from the evaporator we got thirty gallons of oil and water mixed. Where the water came from is still a mystery. Every place that a leak could have occurred has been checked and a vacuum of twenty-nine inches was drawn on the evaporator and held for thirty days without leaking off. The low oil safety cut-out switch failed to stop the compressor when the oil did not return to the crankcase.

By W. T. Garner.

Only AE Vibra-Grate Stokers give you these 3 important benefits



Water-cooled grates. Water-cooling . . . directly connected to the boiler circulation system . . . guarantees the longest grate life available in any stoker today. Proven maintenance costs are less than one cent per ton of coal. In fact, one major installation has used less than $200.00 worth of repair parts in over four years of continuous operation!



Elimination of dust collectors and cinder return systems. Vibra-Grate burns the coal on the grate . . . dust collection and cinder return systems are not needed. You will never have to be selective in the grade of coal you burn either. Vibra-Grate feeds wet or dry fuel, high or low grade coals. It can burn gas or oil singly or in combination with coal. Overfire air assures complete combustion, giving absolute freedom from smoke at high or low ratings.

Higher efficiency. Intermittent vibrating motion of the grate feeds and moves the fuel . . . insuring even, compact distribution on the bed. A combustion-controlled electric timer determines the vibration frequency as required by fuel and steam demand. There are no light spots or holes to reduce efficiency. The grate supports form air-tight zoned sections dampered to permit accurate regulation of undergrate air.

THE AE VIBRA-GRATE offers advantages in stoker operation and efficiency that have never been available before, because it is the only stoker which combines the maintenance saving features of water-cooling and the high efficiency features of a vibrating grate and controlled zone undergrate air. Only from Vibra-Grate can you get such dramatic reductions in maintenance costs . . . as well as efficiencies that can't be equalled. Write for complete information on what Vibra-Grate stokers can do for you in terms of lower operating costs. American Engineering Company, Dept. S-103, Philadelphia 37, Pa.

AMERICAN ENGINEERING COMPANY
Wheatsheaf Lane and Sepviva Street • Philadelphia 37, Pa.
Canadian Subsidiaries: Affiliated Engineering Corporations, Ltd., Montreal, P. Q., Bawden Industries Ltd., Toronto, Ont.

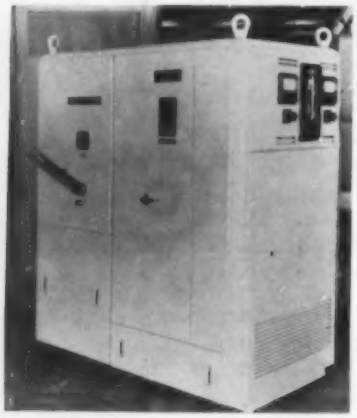
For more information, use Reply Card—Page 87

NEW Product Briefs

. . . there is always a BETTER WAY

Dry-Type Power Centers

G-1 The new line of compact DT-3 power centers, recently announced by **Westinghouse Electric Corporation,** Box 2278, Pittsburgh, Pa. in ratings from 45 through 300 kva, has now been extended to include a 500-kva unit for use in applications up to 5000 volts.

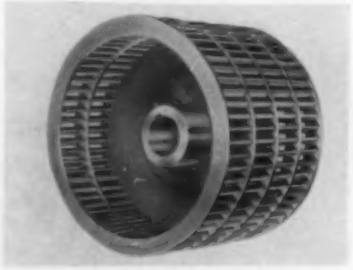


Improved design techniques and the use of 150 C rise Siliclad insulation allow the 500-kva unit, including load-break switch and panelboard, to be contained within a height of 75 in., a width of 69 in., and a depth of 40 in. Total weight of the power center is only about 5200 pounds. The new transformer plus improved mounting techniques inside the housing result in a very quiet power center.

Draft Fans

G-2 A complete line of forward curved mechanical draft fans, designed to provide a high air movement to size ratio, has been developed by **Chicago Blower Corporation,** 9867 Pacific Ave., Franklin Park, Illinois.

By using a large number of forward curved blades, fans can handle large volumes of air or gas within minimum space requirements. All blades are formed of mild or alloy steel, depending on duty. Housings are continuous-weld, heavy steel plate, rigidly braced.



Quiet operation is assured by several design features. Rotors operate at low peripheral speed. Streamline inlets direct the air into the rotor with a minimum of turbulence. Oversized inlet boxes reduce entering velocity, cut noise further, and provide good air distribution to the wheel. Inlet vane controls may be either manual or automatic, as desired.

Fan design results in a rapidly rising pressure characteristic, with a peak efficiency of 78% (per cent free delivery volume against per cent pressure).

Ice Making Machine

G-3 An ice making machine is offered by **Equitable Equipment Co., Inc.,** 410 Camp St., Dept. D, New Orleans 12, La. The machine, which is complete in one package, is available in sizes from 150 lb per day to 2000 lb per day.



This equity ice maker assures dependable, economical operation and is ideal for remote locations. Choice of electric motor — a-c or d-c — or gasoline engine drive.

Pressure Regulators

G-4 **The Atlas Valve Company,** 280 South Street, Newark 5, New Jersey, has announced two new differential pressure regulators for steam service. The first, the Atlas Fig. 1200, Type C, (illustrated) controls atomizing steam pressure at an adjusted value higher than fuel oil pressure. The other, the Atlas Fig. 1210, Type C, controls atomizing steam pressure at an adjusted value lower than the fuel oil pressure.

Simple in design, these valves, both available in sizes ½" to 2" inclusive, have a number of features in common. Easy to service and install, they have a minimum number of moving parts and require no internal adjustments. Of shear port design with honed guide, the 1200 and 1210, Type C, have telltale ports which indicate rupture of either steam or oil diaphragm. "O" ring seals are suitable for 400 F. Their range of differential pressure adjustment is 5 to 45 psi.



Tube Inserts

G-5 **Tennant Development Corporation,** New York, N. Y., is now manufacturing a line of "Alkasert" polyethylene plastic inserts for inlet-end protection of power plant steam condenser tubes. Two styles are available, Standard and Expanded. They are available for ¾" x 18 bwg, ⅞" x 18 bwg and 1" x 18" bwg tube sizes, at present. Other sizes will be made available at a later date.



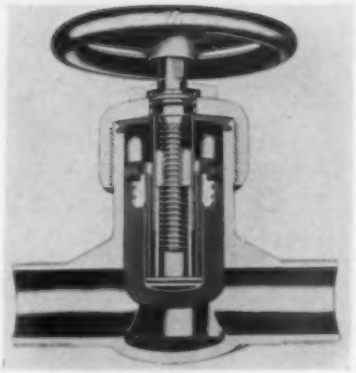
Standard "Alkasert" is a plastic insert made to fit in new tubes only. Its length is designed to cover the critical area exposed to inlet erosion and is streamlined to eliminate any restriction to water flow. It is feathered to a very thin edge to prevent step erosion at the inner end.

Expanded "Alkasert" permits installation in slightly worn tubes. This new insert has been made in graduated sizes to match the wear pattern found in normal installations.

Plastic Valve

G-6 A new valve of all plastic construction introduced by **W. S. Rockwell Co.,** 200 Eliot St., Fairfield, Conn., features an absolutely dependable method of tight sealing. Employing a telescopic arrangement, instead of a diaphragm, a soft-rubber cup is forced to the concave bottom of the passage. Because of its flexibility, the cup under pressure from the stem, seals on all sides against the walls of the body casing, positively shutting off fluid flow.

On the upper part of the shut-off body there is a lipped packing which prevents the fluid from contacting the stem or from leaking out of the valve. The stem is located in two



telescope type sleeves which slide inside each other. This also prevents ingress of the medium. A gasket prevents bearing grease from finding its way into the casing. The outer telescope sleeve acts simultaneously as a pressure tube in the plunger, reinforcing the soft rubber cup from within. Material flowing through the passage under considerable pressure is not forced out to the side during closure.

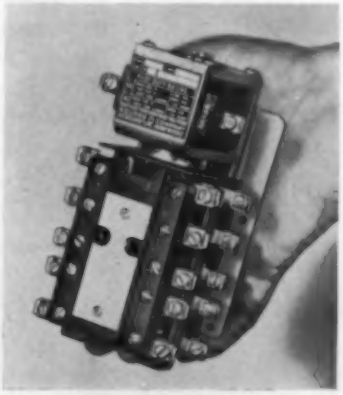
KEEP-UP-TO-DATE
USE SPI
READER SERVICE

See Pages 87-88

D-C Magnetic Relay

G-7 A new compact d-c magnetic relay, designed for pilot duty applications on direct current control panels, has been introduced by **Square D Company,** 4041 N. Michigan Ave., Chicago 11, Ill. The new Type D relays are rated at ten amperes, with contact ratings of 125 volt-amperes for 126 to 600 volts, and 250 volt-amperes for 26 to 125 volts.

The new d-c relay is available with as many as ten contacts. All Square D Type D relays, both a-c and d-c, have the same mounting dimensions regardless of number of contacts.



Mobile Work-Shop

G-8 The Shop-Van, made by **Vanguard Engineering Co.,** 1908 E. 66th St., Cleveland 3, Ohio, is a self-propelled, mobile work-shop, designed for maximum usefulness in maintenance, repair and overhead assembly. This low-priced, battery-powered unit will transport 2,000 lbs of tools, materials and equipment, eliminating time-wasting trudging to and from the supply center. Heavily constructed of unitized, welded steel, the Shop-Van comes complete with telescopic work-platform, battery, bench vise, pipe vise, and a large cabinet. One side of the cabinet contains sixteen drawers each with inner sliding tool tray, the other side consists of two sliding-door shelf compartments. Drill presses, bench grinders, etc., can be mounted on the 34" x 68" table top.

The telescopic work-platform, which is hand-winch operated, has a raised height of ten feet, lowered height of six feet. Additional height is offered as an option.

The propulsion unit is of the fifth wheel type, with a speed of 2½ mph, providing excellent maneuverability, so that the Shop-Van can make a complete turn within its own diagonal length.





Do you need from 60,000 to 100,000 pounds of steam per hour? Have it delivered to your plant in one space-saving, dependable and economical package—the B&W Type FO Package Boiler for oil and gas firing.

What does the B&W Type FO Package Boiler offer you?

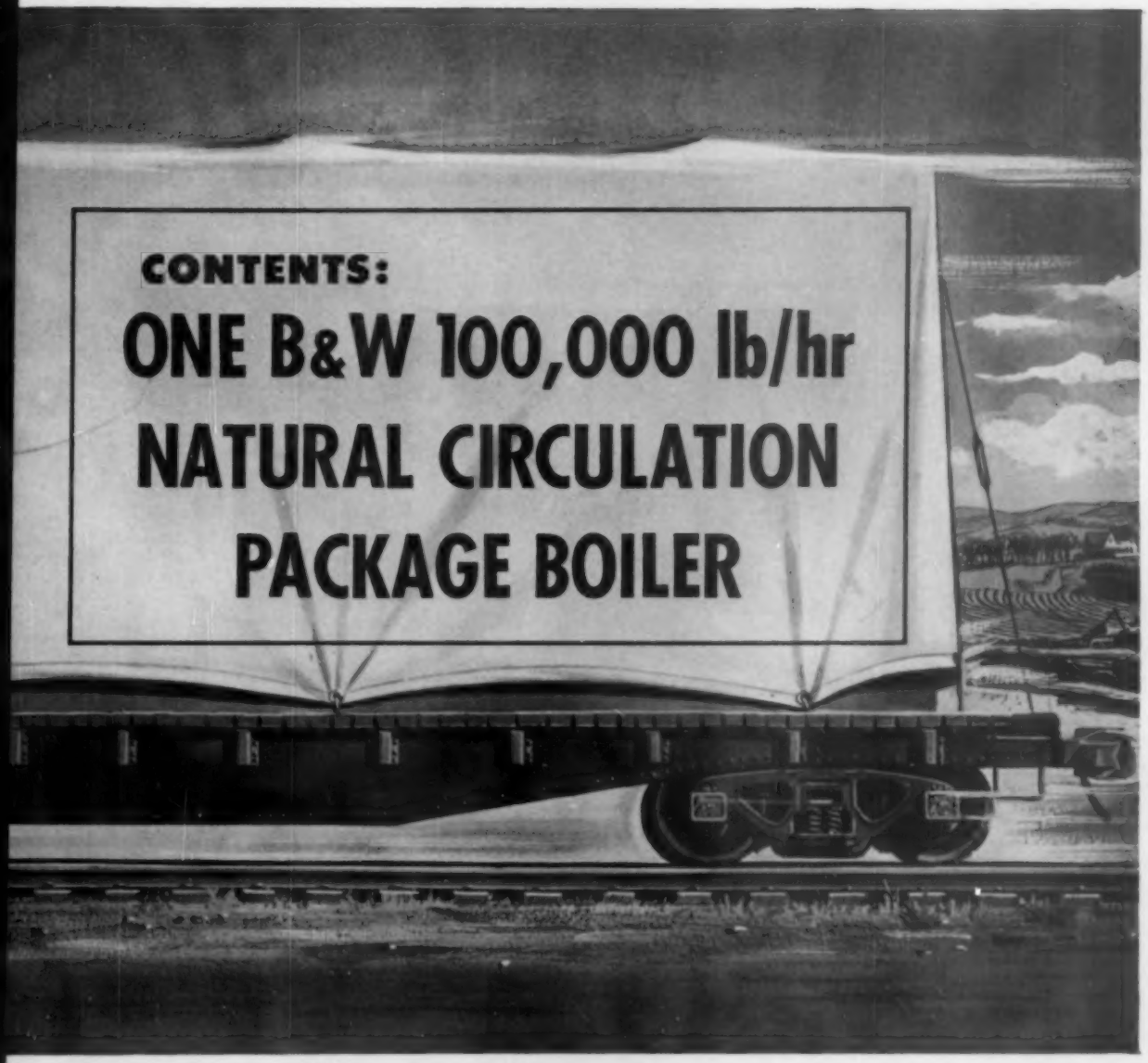
Superior Performance—Capacity up to 100,000 lb/hr. Steam pressures from 250 to 775 psi. Temperatures to 750 F. The B&W Type FO Package Boiler gives you ample furnace volume and area in a really compact unit. It's the result of B&W's years of designing for reliable high capacity in small space for the Navy and Merchant Marine.

Dependability—The entire furnace is water-cooled. That means less trouble; low maintenance. Also, the drainable superheater allows fast start-up and safe, rapid storage.

Easy Cleaning—The tubes are arranged for effective soot blower cleaning.

Natural Circulation—It's the best way to bring you maximum reliability, simplicity, and minimum maintenance at low cost.

Clean, Dry Steam—B&W Cyclone Steam Separators and Scrubbers guarantee minimum carry-



over, maximum circulation. Thousands of boiler installations have proved the superiority of Cyclone Separators.

Easy Installation—Remove it from the flatcar, make a few connections, start it up.

Three words sum up the advantages of the new B&W Type FO Package Boiler—*economy, convenience, quality.*

Get the complete details on the natural circulation, oil and gas fired B&W Type FO Package Boiler, from your local B&W Sales Engineer. Or write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

G-913 1B

Storage Cabinet

G-9 A portable all-metal storage cabinet, ruggedly built for long life and featuring bins with high strength glass fronts, is being marketed by the **Bowers Manufacturing Company**, 105 Michigan St., Toledo 2, Ohio.



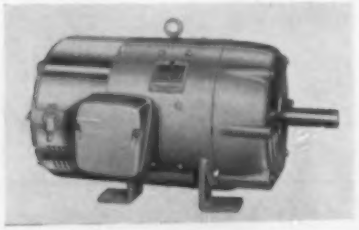
Designed around user needs as a practical low cost control for small-parts inventory or samples, the cabinet comes with 6, 12, or 24 bins. Each bin has a removable divider. Bins are spill-proof, yet open at a slight touch. There is space above glass fronts for placing identification labels that come with each unit. Entire cabinet of welded heavy gauge steel finished in baked enamel Hammertone blue.

D-C Motors

G-10 **The Louis Allis Co.**, Dept. P, 427 E. Stewart St., Milwaukee 1, Wis., recently announced manufacture of a new line of d-c motors, called Flexitorq Motors, available in ratings of 1 to 200 hp in drip-proof and drip-proof guarded enclosures.

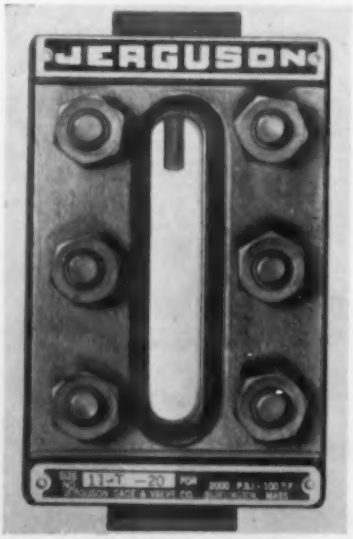
These d-c motors are designed to supply constant or adjustable speed for driving machine tools, metal rolling, drawing or forming machines, cranes, hoists, etc.

Improved performance characteristics include faster acceleration, deceleration, reversing and speed changing, made possible because of a low inertia armature and improved commutating ability. A new Class B insulation is used throughout Flexitorq Motors, permitting intermittent high overloads without damage to the insulation system.



Drip Sight Feeder

G-11 **Jerguson Gage & Valve Company**, 80 Adams St., Burlington, Massachusetts has announced a new High Pressure Drip Sight Feeder, designed for use where drip feeding is required under high pressure, for corrosive conditions, for temperature conditions from below zero to 750 F, or as a small flow indicator. The feeder incorporates a ⅛" dia. drip tube which extends into the upper portion of the chamber of a transparent-type flow indicator, thus making the drop formation easily visible to the operator. A valve with a needle stem is available as a hand-operated flow control valve. For low-temperature service the feeder is available in a patented non-frosting design.



The Drip Sight Feeder carries a pressure-temperature rating of 2000 psi per 100 F, 1100 psi per 750 F, and is available with ½" or ¾" female or 1" male end connections; chambers and covers are rustproofed.

Speed Reducer

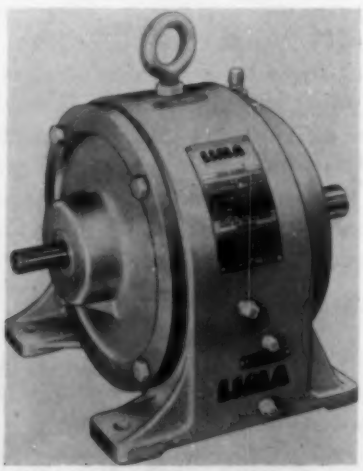
G-12 **The Lima Electric Motor Co., Inc.**, Dept. 195, Lima, Ohio, has announced the addition of Straight Line Speed Reducers to its line.

Foot mounted, flange mounted, or flange mounted with extended housing units are available. All have 5.06:1 to 1478:1 ratios. Capacities of .077 hp to 147 hp. Output speeds range from .49 to 350 rpm.

Built with extra rigid cast housings of unit case design, Lima Straight Line Speed Reducers cannot be distorted by overhung loads, uneven mounting surfaces or accidental impact. This type of construction assures permanent and accurate alignment of shafts, gears, bearings and seals which results in dependable lifetime performance.

For inspection or ratio change, disassembly is simplified and requires removal of the endbell only. This can be accomplished in a matter of minutes without disconnecting the reducer from the load.

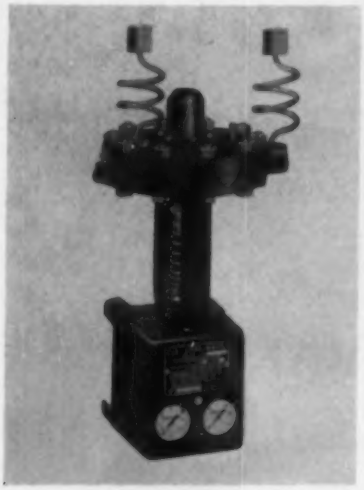
Gearing is scientifically designed for lowest noise level; wide faced fine pitched gears run with low pitch line velocities. Cast housing acts as a vibration and noise dampener, resulting in extremely quiet operation.



Liquid Level Control Pilot

G-13 A new liquid level control pilot with an adjustable proportional band has been developed by **Leslie Co.**, 230 Delafield Ave., Lyndhurst, New Jersey.

By means of a single knob adjustment proportional band can quickly set while the liquid level system is in operation without affecting the liquid level set point.



Employing the differential pressure sensing method, it is unaffected by surface turbulence and does not require troublesome floats, cages, linkages, torque tubes or stuffing boxes. Never more than two small connections to the vessel are required.

Open Cutout

G-14 A new open cutout (Type CDX) for distribution system voltages of 14.4 kv to 24.9 kv and wye systems up to 34.5 kv is available from the **Westinghouse Electric Corporation**, Box 2099, Pittsburgh 30, Pa.

A nonferrous, single-insulator, crossarm mounting type, the new cutout is supplied with a solid cap on the fuseholder and interrupts 2000 amperes. With an expendable cap on the fuseholder, the unit interrupts 6000 amperes. Both the standard fuseholder and the load-break fuseholder are available.

Completely "bird-proof," a polyethylene coating on the metal clamps that hold the unit to the porcelain insulator eliminates short circuits of either natural or bird origin.

(*Continued on Page 84*)



Around-the-clock operations at the Champion Paper and Fibre Company's sprawling Pasadena, Texas, plant called for illumination of a million square feet of wood storage area. And just thirty-two 1,000-watt Wide-Lite area lights were required to provide the answer – uniform coverage without distracting glare or dangerous dark areas.

Designed especially to enhance the unique characteristics of color-corrected mercury vapor lamps, Wide-Lites bring *new dimension* to area lighting. They produce broad patterns which provide smooth, even coverage without hot spots or dark shadows. The patterns may be accurately plotted to determine the exact number of units needed to provide any desired level of illumination.

Ruggedly constructed from cast aluminum alloy, Wide-Lites are finished in aluminum epoxy paint for corrosion control. Outdoor models are sealed with tempered glass lens, and re-lamping is accomplished without disturbing the seal of the lens. Exclusive built-in heat radiating fins limit lamp temperatures to the most efficient range. A choice of reflectors is available on all models, and sizes range from 100 watt to 1000 watt.

To assist you in planning efficient working coverage of outdoor working areas, Wide-Lite engineers have prepared a unique group of transparent plotting curves. Write today for your set!

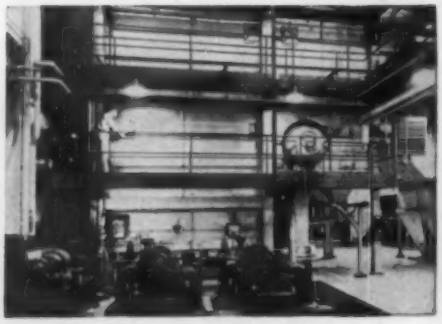
WIDE-LITE.

manufactured by
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P. O. Box 191 • Houston 1, Texas
In Canada: *Wide-Lite Division of Wakefield Lighted Limited*
London, Canada

OUTDOOR AREA LIGHTS • INDOOR LUMINAIRES • SPORTS LIGHTS • PROTECTIVE LIGHTS

For more information, use Reply Card—Page 87





Steam generating plant at Morton, Ill. plant uses two 60,000 lb/hr Wickes boilers, 3 stories high. These are equipped with Hoffman continuous ash-discharge spreader stokers.



Track unloading hopper at York plant. Coal feeds from belt conveyor to bucket conveyor to distributing flight conveyor over storage bunker. Coal handling system by Beaumont Birch.



Ash hopper in Decatur plant. Pneumatic ash removal system by Beaumont Birch Co. connects to vitrified tile ash bin and rotary dustless unloader.

Caterpillar makes tracks for coal

Seven Caterpillar Tractor Co. plants burn coal for low-cost steam generation

When seven plants of a company all burn coal —over 250,000 tons a year—you can be sure there's a *good* reason. At Caterpillar Tractor Co., where steam is used for both process work and heating, coal is burned for low-cost, efficient steam production.

Because of its importance at Caterpillar, steam generation must meet the same standards of efficiency and dependability set up for all phases of plant production. As Caterpillar has expanded from one plant to many, therefore, *each* plant has burned coal.

Coal is lowest cost fuel

Today, *when the annual cost of fuel often equals the original cost of the boilers,* you should know that bituminous coal is the lowest cost fuel in most industrial areas. And modern coal-burning equipment gives you 15% to 50% *more* steam per dollar, while automatic operation trims labor costs and eliminates smoke problems. What's more, tremendous coal reserves and mechanized mining procedures assure you a constantly plentiful supply of coal at stable prices.

Technical advisory service

To help you with fuel problems, the Bituminous Coal Institute offers a free technical advisory service. We welcome the opportunity to work with you, your consulting engineers and architects. If you are concerned with steam costs, write to address below or send coupon. Ask also for case histories booklet, complete with data sheets. You'll find them informative.

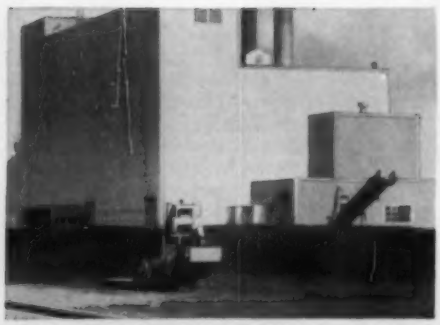
Consult an engineering firm

If you are remodeling or building new heating or power facilities, it will pay you to consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—can effect great savings for you with the efficiency and economy of coal.

BITUMINOUS COAL INSTITUTE

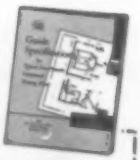
Department SP-06, Southern Building, Washington 5, D. C.

See our listing in *Sweet's*



Exterior view of steam plant at Joliet, Ill. Foreground shows part of outside coal storage area featuring portable car unloader and stacker. Coal is stocked out and reclaimed by Caterpillar bulldozer-equipped crawler tractor.

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☐ GS-1 (low-pressure heating plant, screw-type underfeed stoker); ☐ GS-2 (high-pressure heating and/or process plant, ram-type underfeed stoker); ☐ GS-3 (automatic package boiler for heating and process plants). ☐ Case histories on larger plants.

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Title.....

Company.....

Address.....

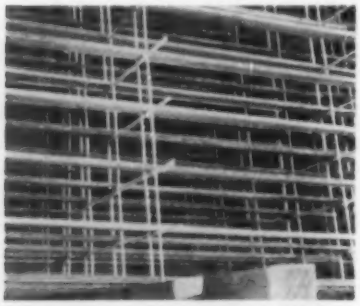
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For more information, use Reply Card—Page 87

New Product Briefs (Continued)

Supporting Filling in Cooling Towers

G-15 **The Marley Company,** [illegible] W. Gregory Blvd., Kansas City, Mo., has developed and is now using as standard equipment a new patented method of supporting filling splash bars in their industrial cross-flow cooling towers.

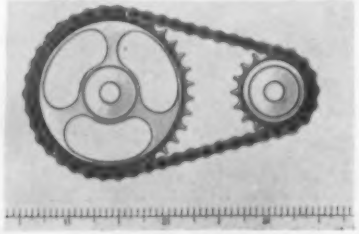


The filling is supported by molded grids fabricated of glass fiber reinforced polyester resin; non-corrosive, immune to rot and decay. These new supports provide a permanently level splash bar installation that prevents water channeling with resultant loss of performance, assure a precisely engineered splash bar arrangement for maximum water breakup, and minimize restriction to air flow.

They are produced mechanically on specially built Marley equipment assuring complete uniformity of each unit with equal strength at all points of filling support. Although of lightweight, the design and materials used in the grid supports provide a safety factor of 30 to 1.

Bushing Chain

G-16 Micropitch, standard bushing chain manufactured by **Diamond Chain Company, Inc.**, Indianapolis, Indiana will soon be available from stock.



The chain will have these dimensions: Pitch — .1475, width — .210 inches, weight — about ⅛ ounce per foot, material — non-magnetic grade 18-8 stainless steel which is corrosion resistant.

Diamond Micropitch combines high strength and high resistance to joint wear with minimum size and weight. It will permit an infinite variety of shaft centers and multiple shafts can be accurately timed because sprockets may engage both sides of the chain.

Sprockets and special attachments can be made to specifications.

In the Diamond Micropitch models, ASA No. 25 — ¼" Pitch chain is now available from stock in stainless or standard steel.

Liquid Level Indicator

G-17 **Yarnall-Waring Co.**, Philadelphia 18, Pa., has announced a new miniature secondary liquid level indicator that will duplicate readings from a primary Yarway Liquid Level Indicator or Yarway Differential Pressure Transmitter anywhere in the plant.



The new indicator is similar to the standard Yarway Electronic Secondary Indicator, but is about one-quarter the size. The outstanding feature of the miniature design is the substitution of a transistorized amplifier in place of the vacuum tube design in the full-size model.

Weight of the completely integrated Yarway Miniature Indicator is approximately 5 lbs. Face dimensions are 2½" wide by 6¼" high.

It is especially recommended for instrument panels where fluid lines under pressure are undesirable, for remote locations where distance precludes use of pressure tubing, where freezing may be encountered, and where installation is far above actual liquid level.

Gaskets

G-18 Formulation of a new compound combining cork and silicone rubber has been announced by the **Armstrong Cork Company's** Industrial Division, Lancaster, Pa.

This unique material known as LC-800 allows the gasket designer to use cork and rubber gaskets at much higher temperatures than heretofore possible.



In addition to extending the temperature range of cork and rubber materials, it is considerably less expensive than straight silicones.

LC-800 can be made in ribbon and lathe cut rings, both extruded and laminated, as well as mats, sheets, and die-cut parts.

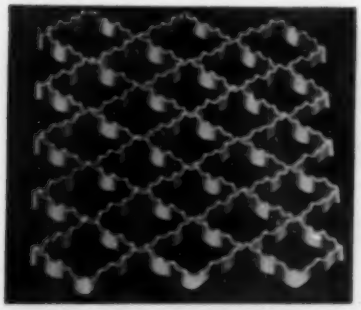
Foamed Plastic Pipe Insulation

G-19 Rigid Foam Pipe Insulation, manufactured by **Baldwin-Hill Co.**, 500 Breunig Ave., Trenton, N. J., is the first pre-molded rigid polyurethane pipe insulating material. Specifically designed for low temperature application down to —300 F, the new material has been thoroughly field tested and is now available nationally.

B-H Rigid Foam Pipe Insulation is easy and pleasant to work with, but its primary virtue is its extremely low thermal conductivity. A U. S. Testing Laboratory report indicates that at a mean temperature of 0 Fahrenheit it has a K-factor of only .096 btu per sq ft, hr, deg F.

Non-Skid Flooring

G-20 **Bustin Steel Products, Inc.,** Dover, New Jersey, has announced an all directional non-skid flooring material, "Protecto."



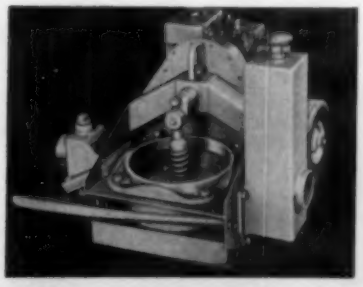
Tests have proven that it is practically impossible to slip on "Protecto" even when heavily coated with grease and set on an angle. The primary objective in engineering this product was to make available an economical safety grille material for the "Assemble-It-Yourself" steel fabricator and maintenance shop in meeting their immediate requirements for stair treads, platforms and many other safety grille products.

"Protecto" is lightweight, yet sturdy, and comes in 9' lengths, in a wide selection of widths.

Diaphragm Pumps

G-21 A completely redesigned and expanded line of diaphragm pumps in the 1½ to 4-inch size range has been announced by **Barnes Manufacturing Co.,** Mansfield, Ohio.

The new line offers capacities from 3500 to 6000 gph at 5-foot lifts. It has been designed to incorporate strength and lightweight compactness through the use of integrally fabricated frame, waterbox and drive bearing support units. This type of construction also results in less vibration, a lower profile for working in cramped quarters and easy transportability.



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MAINTENANCE—TOOLS EQUIPMENT & METHODS

2—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control & distribution systems, etc., at a cost less than 1% of value of equipment. — Atlanta office of WESTINGHOUSE ELECTRIC.

14—Triple-Purpose Gun — Low-cost Carco Gun ($16.50) described in form C-100; ideal for fast, efficient sand blast, liquid, or air cleaning of small parts and surfaces. Operates on any standard air pressure system. — C. A. ROESCH & CO.

22—Lubricator Alert — Data sheet describes lubricator flow switch that indicates positive flow at terminal points on any force feed lubricator system. Easily installed on any existing application. Indicates lack of flow to the point of injection. — MANZEL.

29—Belting Repairs — Two bulletins "How to Properly Join Belts" and "Belt Fastener Selection Chart" offer service help on conveyor, elevator and transmission belting. — CRESCENT BELT FASTENER CO.

32—Scale Removal — Data sheet on Kwik-Kleen, a completely safe method of rapid scale removal for heat transfer surfaces.—The NORTH AMERICAN MOGUL PRODUCTS COMPANY.

66 — Tube Expanding — Bulletin 55 on torque control describes automatic air driven tube expander drive. Control assures uniformity of tube expanding. — THOMAS C. WILSON, INC.

80—Compressed Air Dryers — Cat. D3-1058N5 describes large volume compressed air dryers designed with capacities up to 3000 cfm to handle compressor output up to 600 hp. Extract both water and micronic particles and dry the air to low dewpoint quality in volumes sufficient to protect all plant operations. Dewpoint and capacity graphs included. — VAN PRODUCTS CO.

94 — Corrosion Control — Booklet, 20 pages — "Corrosion Control of Electric Light and Power Structures and Equipment" is designed to give company field operating men practical painting information on all phases of transmission and distribution work. Applicational photographs. — SUBOX, INC.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

100—Power Plant Pumps—Bulletin BJP 58-8 covers complete line of standard pumps for all power plant requirements — from 12,000 hp, doublecase boiler feed pump, to condensate, circulating and booster pumping duty. Also, special pumps for nuclear power plant installation. —BYRON JACKSON PUMPS, INC.

108—Fans—Cat. F285 describes company's fans — oscillators, air circulators and both belt-drive and direct-drive exhaust fans.—EMERSON ELECTRIC.

110 — Deaerator — Publ. 4651 describes design that eliminates tubular vent condensers without impairing efficient purging of noncondensible gases. Unit handles wide range of operating conditions. — COCHRANE CORPORATION.

122—Industrial Fans—Bulletin 702 covers Type XL fans for air and material handling. Volumes to 130,000 cfm pressures to 18" SP. Catalog 855 describes Pressure Fans. Volumes to 12,000 cfm, 10" to 50" SP. — CLARAGE FAN CO.

132—Glassed Centrifugal Pumps — 12 page Bulletin 725.2 describes line of glassed pumps for handling corrosive acids and alkalies. Every part of pump exposed to liquid has a tough glass surface. Specification, ratings, dimensions. — GOULDS PUMPS, INC.

135—Heat Exchanger — Bulletin 132 shows how sectional Aero unit gives close temperature control, saves labor, power, and water; design improves heat transfer to outdoor air by evaporation; 7,000,000 to 18,000,000 Btu/hr capacity range. —NIAGARA BLOWER COMPANY.

143—Chemical Feeders — 36 p Bul. 1136 describes metering pumps — types, construction, displacement and operating pressures. Gives handling recommendations for chemicals, acids, etc., and volumetric conversion tables. — MANZEL.

189—Air Traps — Bulletin 289 describes ball float traps for draining water from air, gas or steam lines, or for draining light liquids from gas under pressure. Physical and selection data, prices, etc. — ARMSTRONG MACHINE WORKS.

INSTRUMENTS—METERS CONTROLS—REGULATORS

200—Control Centers—Built to specific needs of the job to prevent costly breakdowns later. Units custom-built from best components. Specializing in quick deliveries. — THOMAS B. COMBS COMPANY.

205—Draft Gages — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters. — ELLISON DRAFT GAGE CO.

208—Process "Indicator" — Cat. 100 B shows how you can have maximum info on all process variables with Panalarm annunciators. Trouble anywhere is signalled instantly — before it can grow big and expensive. — PANELLIT, INC.

212—Automatic Temperature Control —Data sheets describe versatile automatic indicating temperature control, offering many sequence combinations—step-heating, heating and cooling, wide limit control, or temperature control plus operation of signal devices.—SARCO COMPANY, INC.

218—Liquid Level Controls — Selection chart of "in stock" displacement type magnetrols. Details pump controls and low or high level alarm controls. Wide range specific gravity settings; standard length stem can be cut in field to job requirements. — MAGNETROL, INC.

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Bulletins (Cont.)

222—Pressure Regulators — Catalog No. 77 illustrates and describes application, operation and specifications for a complete line of reducing, back-pressure and pump-pressure regulators.—MASON-NEILAN.

223—Combustion Control — Bulletin 1023, 24 pages—Contains actual installation photos and diagrammatics of Bailey air operated combustion control for oil and gas fired boilers; two pages of chart records and six page list of typical installations. — BAILEY METER COMPANY.

224—Feedwater Regulator—Bulletin 1044 describes the BI Feedwater Regulator, the single-element unit employing a thermostatic-tube level controller which actuates a regulating valve in feed line. For loads from 10 to 785 psig. Includes specifications table and schematic diagram. — COPES-VULCAN DIV.

228—Fuel Cuts-Outs & Water Level Alarms — Brochure D2 — Electrode type equipment for installation on water columns to provide fuel cut-out, high and low water level alarms and pump cut on and off. For pressures to 2500 psi. — RELIANCE GAUGE COLUMN CO.

235—Liquid Levels — Bulletin 532 describes indicator which gives a reliable, automatic reading of storage tank contents. 20" dial in 3 x 10" case saves panel space. No outside power source needed; can be located up to 250 ft from tank. — THE LIQUIDOMETER CORP.

253—Combustion Analyzer — 4 p Specification E65-5 describes the "Heat Prover" which indicates per cent by volume oxygen and combustibles present in exhaust gases from all types of boiler and industrial furnaces. — BAILEY METER COMPANY.

267—Remote Liquid Level Indicator —How clear, brilliant readings from any angle are possible with this unit is explained in Bulletin WG-1824. Pointer is always visible, even at extreme high and low water levels. Of manometric type with automatic temperature compensation. — YARNALL-WARING COMPANY.

299—Boiler Control Systems—GPS-901 describes power, steel, marine and industrial boiler control systems and components. Also temperature and process control systems. Water treatment chemicals, boiler compounds and inhibitors for industrial and municipal purposes. — HAGAN CHEMICALS & CONTROLS, INC.

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

301—Vacuum Cleaning Systems — How portable and stationary systems cut costs and increase plant efficiency shown in Booklet P8 and AB-100. Eight heavy duty units (1½ to 15 hp) for cleaning hard to get at areas, reclaiming valuable materials, etc. — U. S. HOFFMAN MACH. CORP.

310—Incinerator — Metal cased, insulated, refractory lined incinerators for industrial and commercial use. City smoke code approved. Fast, economical installation — any size and capacity. — NORTH STATE PYROPHILLITE CO.

315—Pressure Vessels — Catalog 100 discusses your plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

316—Drainage & Construction—Catalog Gen-10658 includes data on drainage and construction products for industrial uses. Includes corrugated metal pipe, paved-invert pipe, Asbestos-Bonded pipe, Multi-Plate pipe, pipe-arches, perforated pipe, water control gates, etc. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

319—Portable Band Saw — Bulletin describes the Kalamobile, a portable metal-cutting band saw. Has rubber-tired 12" wheels and telescoping handles. Capacity 6" rounds — 10" flat — Machine Tool Div., KALAMAZOO TANK AND SILO CO.

323—Mercury Vapor Fixture — Industrial color corrected units described in Bulletin 401. "Stabilux Socket" secures bulb end of lamp, eliminating lamp rupture and breakage from vibration. — WIDE-LITE CORP.

334—Storage Racks—Bulletin 17SP shows how Rackmaster Fittings cut rack-building time as much as 60% by eliminating threading and welding. Pipe 100% salvageable. — THE HOLLAENDER MFG. CO.

336—4-D Wrought Iron — 8 p booklet discusses 4-D Wrought Iron which is 25% more corrosive resistant than standard wrought iron. Illustrated test section, applications and service conditions included. — A. M. BYERS CO.

351 — Grating & Treads — Bulletin 2527 describes electroforged, riveted, rectangular, diagonal, "U" and "T" types of interlocked grating and treads. Safe load tables and specification information. — BLAW-KNOX EQUIPMENT DIV.

355—Steam-Jet Cleaners — Bulletins JC-100 and SG-200 describe steam - jet cleaners. Series "R" Speedylectric generates steam to 250 psig and temperatures to 405 F. Larger cleaners available. — PANTEX MFG. CORP.

363—Magnetic Separators — Catalog 910 covers wet concentration and magnetic recovery. Various types and sizes shown as well as typical installations and machines. — JEFFREY MFG. CO.

377 — Track Materials — Catalog 575A points out time and money savings through single-source buying of track materials and supplies. Offers information on frogs, switches, crossings, etc. — L. B. FOSTER CO.

382—Hydraulic Cutters — Bulletin No. 755 describes one-hose hydraulic rod and bar cutters. Three cutterheads and 3 power units available to handle cuts up to 1⅜" in diameter. Illustrations, specifications and technical data. — H. K. PORTER, INC.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

401—Steam Traps — Bulletin 775 gives price, dimension and capacity data on Open Float and Thermostatic Steam Traps for trouble-free heating service.—ARMSTRONG MACHINE WORKS.

402—Forged Steel Valves—General Purpose Valves, Supplement No. 1 to Catalog F-9, covers gate, globe and angle valves. ½" thru 2" sizes, for 150-800 pound service. Featuring 13% chrome stainless steel trim with hard facings. — HENRY VOGT MACHINE CO.

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

407—Piping Materials—Bulletin reports on intensive investigation into problem of main steam piping

Bulletins (Cont.)

materials and gives data on stress rupture characteristics of Types 316 and 347 stainless steel piping adjacent to welded joints. — PITTSBURGH PIPING AND EQUIPMENT COMPANY.

408 — Wide-Range Valves — Data Sheet 10-5 covers the "Point 4 Factor Trim" — answer to those few types of applications where reduced capacity trim is desirable. Available in V-port and solid turned designs for double or single seated valves and in wide variety of material. — MASON-NEILAN DIV.

409—Lubricated Plug Valves—Catalog PV-4 covers operational features. Quarter-turn to open or close; lubricant grooves provide positive seal when valve is closed; when open, seating surfaces not exposed. —THE WM. POWELL COMPANY.

417—Welding Fittings — 192 page Cat. 54 gives design data on piping and piping application including digests of specifications, working pressures, design formulas, etc. Covers welding fittings, prefabricated pipe, forged steel flanges, and pipe coils. — MIDWEST PIPING COMPANY, INC.

432 — Aluminum Jacketing — Data sheets describe low first-cost, long life jacketing for weatherproofing of insulated lines, towers, vessels and tanks. Lap-Seal design feature makes more positive weather seal. — CHILDERS MANUFACTURING COMPANY.

438 — Steam Traps — 8 p Bulletin T-1742(57) illustrates and describes high capacity impulse steam traps. Includes capacities, dimensions, weights, and prices.—YARNALL-WARING CO.

443—PVC Fittings & Flanges—Corrosion resistant polyvinyl chloride pipe fittings & flanges covered in 12 p catalog, featuring characteristics, advantages, limitations, operating pressures, temperatures, field tests, etc.—GRINNELL COMPANY, INC.

463—Stainless Steel Valves — Catalog 59 SS describes complete line of gate, globe and swing check valves with full details of valve patterns in alloys that satisfy requirements of most corrosive services. Includes section to show degree of resistance of alloys to many corrosive media under varying conditions. — JENKINS BROS.

478—Trap Selection—Booklet "How to Select Steam Traps and Other Fluid Specialties" gives valuable tips on which of the four basic types of traps—inverted bucket, thermostatic, combination or float — to use for any installation. — V. D. ANDERSON CO.

493—Unions & Valves — Complete company line of pipe unions and check valves covered in Catalog 56. New Four-Star lug nut unions & spring controlled check valves included. — CATAWISSA VALVE & FITTINGS COMPANY.

BOILERS—STOKERS TURBINES—BURNERS

500—Underfeed Stoker — Type "R" multiple retort underfeed stoker in sizes from 20,000 to 500,000 lb of steam per hour; air and water-cooled types available; burns both low and high grade coals, wet or dry; either continuous ash discharge or power dump, with moving ash discharge plates. — AMERICAN ENGINEERING CO.

501—Package Boiler—New compact, low cost package unit (oil or gas fired) for small space requirements is described in Bulletin DK-1. Pressures to 325 psi, steam capacities to 45,000 lb/hr.—E. KEELER CO.

505—Refractories — Paco High Heat Duty and Super Duty Plastic Refractories. Fire brick, high temperature cement, castables. Installation and engineering service. Free estimates and inspection. — NORTH STATE PYROPHYLLITE CO.

509—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose.—NORFOLK AND WESTERN RAILWAY.

511—Feedwater Treatment — Bulletin describes liquid and dry (Braxon & Flako) boiler feedwater treatment recommended for removal and prevention of scaling and corrosion during use of many types of water and for prevention of foaming and carryover. — ANDERSON CHEMICAL CO.

513—Power Plant Equipment — 12 page booklet No. 1022-B gives details on combustion and boiler feedwater control, pressure reducing, desuperheating and automatic soot blowing — retractable and rotary. — COPES-VULCAN DIV.

519—Feed Water Deoxygenation—12 page Bulletin BW-7 describes advantages of chemical deoxygenation of boiler feed water with an aqueous solution of Hydrazine. Covers in detail the properties and action of Hydrazine in maintaining boilers as well as recommended methods of application. — FAIRMOUNT CHEMICAL CO., INC.

524 — Packaged Firetube Boiler — Bulletin MR-1A briefly describes the new Model "R" Generator. Available in sizes from 10 hp thru 600 hp with design pressures ranging to 250 lb. Quality engineering and greater simplicity are emphasized.—AMES IRON WORKS, INC.

527—Pneumatic Spreader Stoker — Bulletin shows how unit combines coal drying, metering, conveying, uniform burning and cinder return in one efficient system. — IRON FIREMAN MFG. CO.

530—Coal Plant Specifications — 64 page brochure, including 5 drawings, is a comprehensive guide for preparing specifications on coal-fired, low-pressure heating plants in the size range of 750,000 to 5,500,000 Btu/hr. All aspects affected by choice of fuels from storage bin to stack design covered fully. — BITUMINOUS COAL INSTITUTE.

531—Fuel Oil Treatment — Data sheet describes how Mogul treatment disintegrates, dissolves and disperses sludge in fuel oil storage tanks and equipment. Thru sludge dispersal, maximum vaporization and combustion are possible. —THE NORTH AMERICAN MOGUL PRODUCTS COMPANY.

550—Coal Crushers—Catalogs 784-C describes single and double roll crushers, swing hammer pulverizers for all sizes of plants. — JEFFREY MANUFACTURING COMPANY.

552 — RotoStoker — Cat. 860 describes this overthrow spreader type stoker with power or hand operated dumping grates or stationary grates. Burn all grades of bituminous or lignite coals, many refuse fuels. — DETROIT STOKER CO.

572—Coal-Pak Automatic Boiler — Cat. AIA No. 30-A, 34A gives typical applications of Coal-Pak automatic boiler — low-pressure steam heating, hot water heating, and high-pressure process steam. — BITUMINOUS COAL INSTITUTE.

574—Packaged Generator — Bulletin 582 describes Vapormatic Coil-N-Shell Steam Generator for service requirements of 5 to 150 psig. Gives operation features and specification data. Available with gas, oil, and combination gas/oil fuel systems. — TEXSTEAM CORP.

586—Boiler Controls — Bulletin C1 describes automatic combustion controls for gas fuel firing of boilers of all sizes. Complete pneumatically powered systems of both the positioning and proportioning type are illustrated. — WEBSTER ENGINEERING CO.

ENGINES—DRIVES
POWER TRANSMISSION
MATERIALS HANDLING

601—Crane Runway Rails — Catalog gives information on crane rails, angle bars, crane stops, rail clips, hook and anchor bolts, bearing plates. Also specifications on various sizes of crane rail clips and explains how to order rails. — L. B. FOSTER CO.

602—Pneumatic Ash Conveyors — Bulletin S57-A describes pneumatic ash conveyors for rugged, wear-resistant pipe and fittings that provide lower maintenance cost per ton of ash covered. — NATIONAL CONVEYORS CO. INC.

614—Vertical Transportation — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumbwaiters, and modernization and maintenance equipment for use in industrial, utility and service plants. — OTIS ELEVATOR CO.

629 — Longer V-Belt Life — 12 page Bulletin 20x6234C describes various types of V-belts and tells how to select and match them. Lists seven steps for correct installation and hints for making them last longer. — ALLIS - CHALMERS MFG. CO.

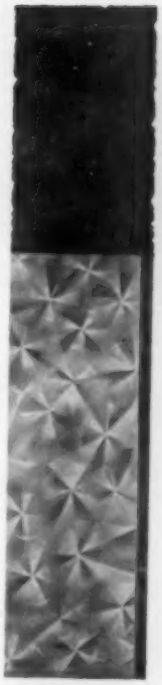
638—Idlers — Bulletin 925 details the Permaseal Idler's development from laboratory to installation. Outlines Double Flexible Diaphragm Seal which keeps grease in and dirt out. — JEFFREY MANUFACTURING CO.

641—Belt Conveyors — 88 p Cat. ID-591 shows principal belt conveyor products, including heavy duty and standard roller bearing and precision ball bearing idlers. Comprehensive Engineering Data section contains simplified and condensed information for proper selection. — CONTINENTAL GIN CO.

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

701—Exhausting Corrosive Fumes— Bulletin 702-A shows how corrosive fumes can be exhausted with rubber, lead lined or specially coated fans. — CLARAGE FAN CO.

702—Water Conditioning — Bulletin 611C, 20 p, describes manual & automatic softeners, zeolites and ion exchange resins, mixed-bed and multi-column deionizers, dealkalizers, ion exchange systems, filters & purifiers, and water treating chemicals. — ELGIN SOFTENER CORPORATION.



HOT-DIP GALVANIZING by DIXISTEEL TRADE MARK adds years of life to Iron or Steel

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Atlantic Steel Company

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For more information, use Reply Card—Page 87

Bulletins (Cont.)

703 — Air Conditioning — Bulletin 122 describes and illustrates operation and suggests applications for air conditioning method that controls humidity to 1% rh and temperature to 1 F (up to 140 F) with accuracy, independent of moisture sensitive instruments. — NIAGARA BLOWER CO.

705—Test Your Tower—Bulletin offers simple, proved method by which you can determine how closely your actual tower performance measures up to specified performance. Particularly applicable to operations geared to temperature of process cooling water. — THE MARLEY COMPANY.

706—Automatic Roof Cooling—Bulletin shows how automatic evaporative roof cooling can reduce inside temperature 8 to 15° without air conditioning; increase roof life; and reduce fire hazards. Many Southern installations. — APRIL SHOWERS — SOUTHERN.

708—Zeolite Softener — 8 p Bulletin 4530-A discusses the hydrogen zeolite process — its advantages, chemistry and neutralizing variations. — COCHRANE CORP.

710—Scale Remover—Bulletin shows how Anco Scale Remover quickly eliminates scale in boilers, water lines, refrigeration and air conditioning systems.—ANDERSON CHEMICAL COMPANY.

712 — Ion Exchange Equipment — Bulletin A-255 describes the various methods of ion exchange treatment which provide suitable boiler feedwater, process water, and purified solutions.—ILLINOIS WATER TREATMENT CO.

713—Electric Precipitators—26 page Bulletin 104 shows how units meet five engineering requirements —Positive control of gas flow; high, uniform electrode emission; Effective continuous cycle rapping; and Safe, trouble-free high voltage equipment. Gives 9 time-tested steps to a successful installation. — BUELL ENGINEERING COMPANY.

715 — Amine Treatment — Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems. — THE BIRD ARCHER COMPANY.

720—Power Roof Ventilator — 4 p Bulletin 550 illustrates and describes company's Centrilator, the centrifugal power roof ventilator with the exclusive "jet siphon." Includes capacity and dimension tables. — CLARAGE FAN CO.

734 — Dust Collector — 8 p bulletin describes dust collection system for collecting nearly 5 tons of dust per hour. Includes 1st and 2nd stage collectors — 48 cyclones and 2 twin-section electric precipitators. Well illustrated. — BUELL ENGINEERING CO., INC.

739—Air Engineering — 8 p Bulletin 135 illustrates and describes air engineering apparatus for process industries. Includes after-coolers, air conditioners, liquid coolers, heat exchangers, condensers, refrigeration equipment. — NIAGARA BLOWER CO.

KEEP-UP-TO-DATE
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READER SERVICE

748—Stop Fungal Decay — Bulletin MT-58 describes company's preservative wood treatment for cooling towers, pinpoints organisms that destroy effective performance and prescribes treatment that arrests these destructive organisms, as well as the application techniques. — THE MARLEY COMPANY.

764—Cooling Equipment — Bulletin 80-D describes company's complete line of commercial and industrial equipment—operating principles, design features, etc.—FRICK CO.

ELECTRICAL

801—Motors—Bulletin describes and catalogs more popular a-c motors from 1 to 600 hp, for every process and manufacturing requirement. Single phase and polyphase; surpass NEMA specifications. — BROOK MOTOR COMPANY.

805—Power Factor Correction — 24 page catalog 50B shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations.—SPRAGUE ELECTRIC CO.

842 — Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMANN MFG. CO.

899—D-C Insulation Testing — Bulletin GEA-6722 describes the 3 step test of insulation system. Includes thumbnail outline of "What You Should Know About D-C Insulation Testing of Motors, Generators, and Power Transmission Cables." — GENERAL ELECTRIC CO.

871—Electrical Protection — Protection Handbook — Tells how to protect motors, apparatus and circuits. Gives National Electrical Code requirements in simplified form. Designed to help the electrical or plant maintenance engineer. — BUSSMANN MFG. CO.

Late Bulletins

T-1—Use of Plastics — "Guide to Use of Plastics in Production, Maintenance and Safety Applications" printed in columnar form to aid engineers and shop personnel in quick selection of the right type plastic for specific applications. Helpful hints on proper storage and care of plastic sheets, rods and tubes. — COMMERCIAL PLASTICS & SUPPLY CORP., 630 Broadway, New York 12, N. Y.

T-2—Dust Collector — 20 p Bulletin 272-B gives information about application, principle, design, construction, operation, installation and arrangements of Type D Roto-Clone dust collector. Illustrated. — AMERICAN AIR FILTER CO., INC., 215 Central Ave., Louisville, Ky.

T-3—Speed Reducers — Bulletin 5908 contains information and specifications on company's line of vertical-helical speed reducers, both double and triple reduction. Includes selection instructions. — WEBSTER GEAR CORP., Ind. Prod. Div., Box 126, Belmont, Calif.

T-4—Nylon Core Belting — 12 p booklet summarizes the salient facts about Nylon Core Belting, a new type of flat transmission belting. — L. H. SHINGLE CO., Camden 3, N. J.

T-5—Control Systems — 4 p Bulletin 159 describes packaged centralized control systems and their advantages. Illustrates various custom-engineered control panels. — PROTECTION CONTROLS, INC., 6000 N. Legett Ave., Chicago 46, Ill.

T-6—Emergency Lighting Equipment — 1959 catalogue shows units which are designed to provide emer-

gency lighting instantly and automatically whenever a power failure plunges an area into darkness. — ELECTRIC CORD CO., 21 Spruce St., New York 38, N. Y.

T-7—Air Compressors — 4 p Bulletin ER-G-4 discusses "What Every Plant Engineer Should Know About Air Compressors." Includes glossary of technical terminology used in compressor catalogs and manuals. — FULLER CO., Catasauqua, Pa.

T-8—Distribution System — Bulletin RCP-790 gives complete and accurate information for proper installation of new, primary overhead insulated distributing system. — ROME CABLE CORP., Rome, N. Y.

T-9—Gearmotors — Bulletin 3050 offers engineering information on gearmotor ratings of 1/3 to 30 hp, single reduction, with output speeds of 23 to 280 rpm. Includes specifications. — LOUIS ALLIS CO., 427 E. Stewart St., Milwaukee 1, Wis.

T-10—Power Rectifiers — Data sheet gives descriptions, data and specifications on company's power rectifiers. Includes electrical and mechanical characteristics and data on performance for diodes with capacities of 6, 20 and 40 amps per cell and with peak inverse ratings of from 50 to 500 volts. — SYNTRON CO., Lexington Ave., Homer City, Pa.

T-11—Safety Switch — Illlustrated bulletin describes the Dyna-Switch, which automatically cuts the power supply when a hoist or crane approaches the overload stage. — W. C. DILLON & CO., INC., 14620 Keswick St., Van Nuys, Calif.

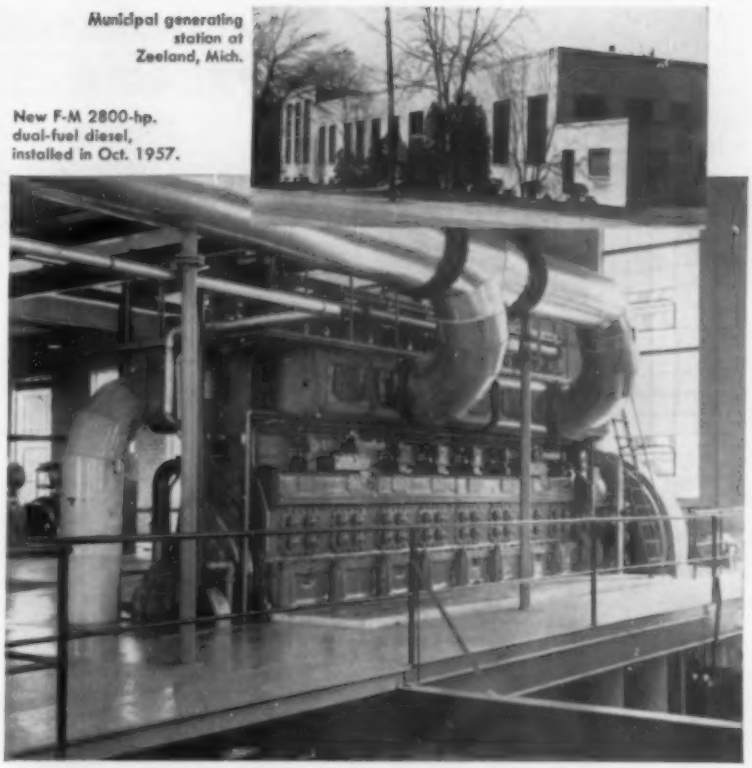
T-12—Induced Draft Fans — Bulletin L-1A discusses features and capabilities of Induced Draft Fan which reduces stack maintenance costs while improving combustion in either hand-fired or mechanically-fired boilers. Schematic drawings, dimensioned diagrams and photographs. — LEHIGH FAN & BLOWER DIV., FULLER CO., Catasauqua, Pa.

T-13—Aluminum for Heat Exchangers — Booklet gives advantages of aluminum usage in heat-exchanger fabrication. Text covers aluminum heat transfer rates, temperature properties, tensile strengths, pressures and dimensional tolerances. Charts provide info on aluminum stress values, working pressures, thermal expansion and conductivity and friction factors. — REYNOLDS METALS CO., Dept. RPD-2, Box 2346, Richmond, Va.

T-14—Millivoltmeters — 28 p Catalog C10-1 covers operating principles, specifications, features, and

Municipal generating station at Zeeland, Mich.

New F-M 2800-hp. dual-fuel diesel, installed in Oct. 1957.



Even with poor load factors

new F-M dual-fuel diesel cuts fuel costs 21% for Zeeland plant!

From July through October 1958, this 2800-hp. Fairbanks-Morse dual-fuel diesel produced 71 percent of the 4,502,000 kw. hr. generated at the Zeeland, Michigan municipal plant.

The big Model 31AD18 engine averaged 5.74 mills per kw. hr. for this period—bringing average fuel cost for the plant down to 6.52 mills from an average 8.24 the previous year, a 21 percent reduction in fuel costs! The figures are even more impressive when it is realized the F-M diesel was operating at poor load factors, often well below 50 percent. Despite this disadvantage, F-M dual-fuel design made the operation profitable—even with gas costing 45¢ a thousand cubic feet and pilot oil 12.5¢.

Outstanding economy and dependable performance of six Fairbanks-Morse diesels in the plant are paramount in Zeeland keeping residential rates among the lowest in Michigan—averaging 2.3¢ a kw. hr. for the last fiscal year. For information, write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL, DUAL FUEL AND GAS ENGINES • LOCOMOTIVES • ELECTRIC MOTORS • GENERATORS
PUMPS • SCALES • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

ordering info on non-control and control millivoltmeters. — MINNEAPOLIS-HONEYWELL REGULATOR CO., Wayne & Windrim Ave., Philadelphia 44, Pa.

T-15 — Motor Application — 16 p Form 270A is a guide to make motor selection easy. Polyphase, single phase and direct current motor selection charts describe typical motor driven equipment, show starting and running toques for such equipment, load characteristics, type of motor to use on the equipment. — CENTURY ELECTRIC CO., 18th & Pine Sts., St. Louis 3, Mo.

T-16—Air-Cooled Pump — Bulletin 2458 describes Model 106 high vacuum pump having six dual vanes with high pressure oil seal, plus radiator-cooled lubricating system. Includes principle of operation, construction, advantages, performance curves and dimensions.—LEIMAN BROS., INC., 102 Christie St., Newark 5, N. J.

T-17—V-Belt Drives — 32 p Catalog DH-900 provides complete drive design information on new concept in power transmission. Includes drive tables and service level information. — GATES RUBBER CO., 999 S. Broadway, Denver 17, Colorado.

T-18—Compressors — Bulletin A-44 provides pertinent data on 14 sizes of WGO-9 oil-free compressors ranging from 95.6 to 939 cfm.—JOY MFG. CO., Oliver Bldg., Pittsburgh 22, Pa.

T-19—Jet Vacuum Pumps—Bulletin 5H-HS describes Hydro-Steam Vacuum Units which are available in single, 2, 3, 4, and 5 stage types. Includes jet apparatus theory, design features, operation, construction and application. Illustrated. — SCHUTTE & KOERTING CO., Cornwells Heights, Bucks County, Pa.

T-20—Ground Flat Stock — 16 p Bulletin M80 describes company's line of Precision Ground Tool Steel and Low Carbon Ground Flat Stock. Price list included.—BROWN & SHARPE MFG. CO., Providence 1, Rhode Island.

T-21—Deaerators—4 p Bulletin 4528 describes package deaerators for small and medium sized boilers plants. — PERMUTIT CO., 50 W. 44th St., New York 36, N. Y.

T-22—Heat Exchanger Specifications — Manual M-100 is a guide to specification writer or engineer who desires to simplify heat exchanger specifications by using a single modular hairpin unit for all duties. — BROWN FINTUBE CO., 510 Huron St., Elyria, Ohio.

T-23—High Speed Drives — Bulletin 5904 covers complete range of high speed drives for special test stands, industrial applications, pipeline and air conditioning service. Includes engineering details, dimensions, rating tables and other installation aids. — WESTERN GEAR CORP., Box 126, Belmont, Calif.

T-24—Space Filter — Bulletin 1505-5 describes Ultra-Aire Space Filter, designed with high dust carrying capacity and replaceable filter elements. Illustrated.—MINE SAFETY APPLIANCES CO., 201 N. Braddock Ave., Pittsburgh 8, Pa.

T-25—Compressors — 8 p Bulletin 350 describes and illustrates 3-AT compressor, a horizontal, water-cooled, single-stage, heavy-duty compressor. — PENNSYLVANIA PUMP COMPRESSOR CO., Easton, Pa.

T-26—Lubrication & Cooling Systems — Bulletin 1451 describes company's lubrication and coolant systems for the steel, non-ferrous metal and paper industries. Illustrated. — DRAVO CORP., Neville Island, Pittsburgh 25, Pa.

T-27—Manual Starters — 8 p Bulletin 11B1 contains data covering design, dimensions, ratings and prices on manual starters which are rated thru 7½ hp a-c and 2 hp d-c. — FURNAS ELECTRIC CO., 1047 McKee St., Batavia, Ill.

T-28—Air Diffusion Equipment — 58 p Catalog 1-59 includes data on wall & ceiling type supply grilles and registers, a section on wall, ceiling and door type return grilles and registers, data on extruded aluminum airline grilles, and accessories and miscellaneous products. Selection tables and illustrations included. — WATERLOO REGISTER CO., INC., Box 72, Waterloo, Iowa.

T-29—Insulation — 8 p Brochure 1-IN-759 describes and illustrates insulations for pipe and equipment. Materials are effective for temperatures up to 1,800 F. — OWENS-CORNING FIBERGLAS CORP., Toledo 1, Ohio.

T-30—Spray Nozzles — 32 p Catalog 59 gives complete listings and data on all types of nozzles for industrial spraying applications. Illustrated. — WM. STEINEN MFG. CO., Ind. Nozzle Div., 4 Bruen St., Newark, N. J.

MOST MAJOR U.S. POWER PRODUCERS
REDUCE COSTS with PANALARM ANNUNCIATORS



MAXIMUM INFORMATION on all process variables . . . the result of 10 years system engineering by Panalarm and major power producers. That's why Universal Series 50 is the power industry's most informative annunciator. Trouble anywhere is signalled instantly—*before* it can grow big and expensive. "Off-normals" are pinpointed instantly, accurately for fast remedial action, reducing costly "outage" losses.

Economical, highly flexible design facilitates system expansion. Can be simply adapted to your exact requirement, avoiding costly custom designing. Proven components—e. g., almost 1,000,000 dependable Panalarm developed relays have been used in Panalarm Annunciators.

Ask your nearby Panalarm sales engineer to show you why Universal Series 50 is the power industry's No. 1 annunciator choice . . . how its adaptability and reliability can help increase your profits . . . by producing maximum information and reducing costly "outages." No obligation, of course.

Write for Catalog 100 B today.

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PANELLIT, INC.
7401 No. Hamlin Ave., Skokie, Ill.

Southern News Briefs
Continued from Page 34

Lunkenheimer — Houston, Texas

The opening of a new branch in Houston, Texas, has been announced by the **Lunkenheimer Co.** of Cincinnati, Ohio. **William Boles** has been appointed branch manager.



Located at 3711 Polk Avenue, the new Houston Branch includes both sales offices and warehouse facilities adjacent to a railroad siding. A complete line of Lunkenheimer valves and specialties will be stocked.

Before receiving his new assignment, Boles served as a Lunkenheimer sales representative in Baton Rouge, Louisiana.

Reynolds Aluminum Service — Va.

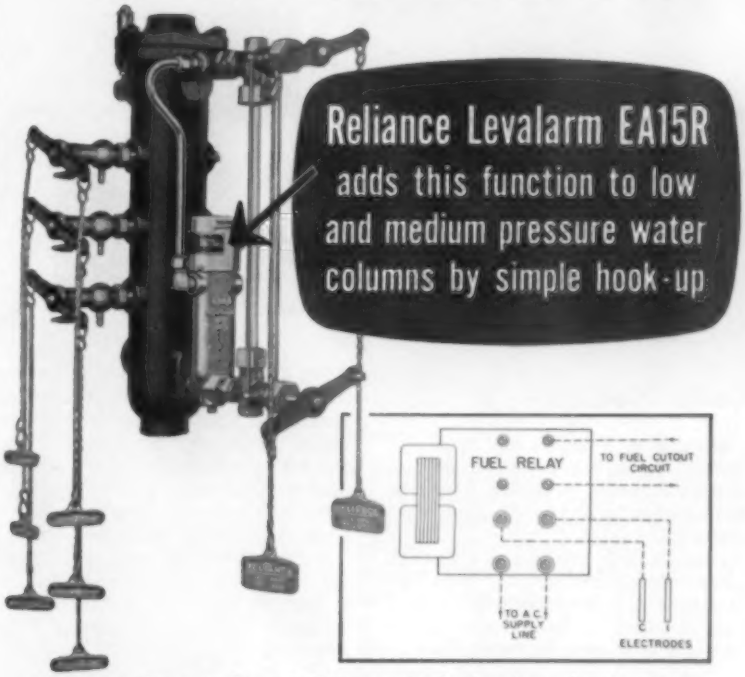
Albert M. Cole, who recently resigned as federal housing administrator, has taken up his duties as



executive vice president of **Reynolds Aluminum Service Corporation,** a Reynolds Metals subsidiary, in Richmond, Va.

(*Continued on Page 96*)

Install a fast-acting, positive fuel cut-out control at low cost



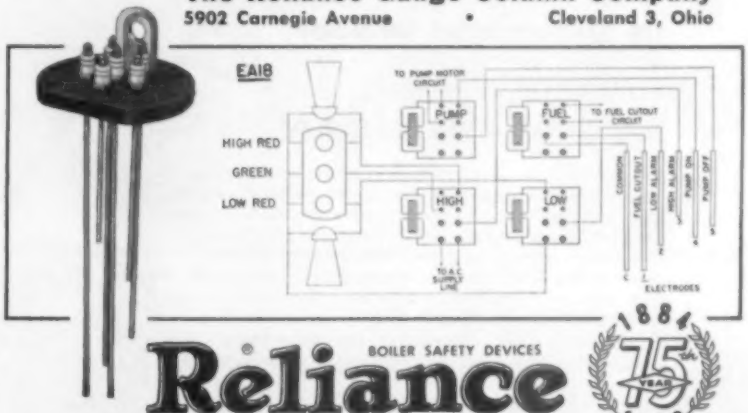
Two electrodes extend into boiler water in the Levalarm chamber. Water surrounding them completes a closed circuit carrying special current supply from a transformer. When water level drops below the electrodes, the relay circuit to the solenoid-operated fuel valve is broken. Action is immediate. An auxiliary alarm can be actuated at the same time. This Levalarm may be installed on any water column having gage centers not less than 12½"; maximum 450 psi. Very easy to install . . . Another model is designed for pressures to 900 psi.

Up to FIVE functions possible with other Levalarms

Broad protection for your boiler's safety can be realized through multiple-electrode Levalarm models that install in the water column cap. Model EA18 has enough electrodes to provide fuel cut-out, low and high water alarms, and start and stop feed pump. To comply with insurance company rulings requiring dual fuel cut-out facilities, an extra electrode can be added to the Levalarm. Thus no additional piping needed.

It will pay you to get details on Reliance Levalarms. Write for Bulletin D2 or contact nearest Reliance Representative.

The Reliance Gauge Column Company
5902 Carnegie Avenue • Cleveland 3, Ohio



BOILER SAFETY DEVICES
Reliance
1884 75 YEARS 1959

Southern News Briefs — Continued from Page 95





Carlon Products — SE

Richard A. Formato has been appointed Sales Manager of the Southeastern Division of **Carlon Products Corporation,** producer of plastic pipe and fittings.

Formato was previously a Carlon sales representative in Virginia, Maryland and the District of Columbia. Replacing him in his former territory is **Robert D. Pettit, Jr.**

Mr. Formato has been with Carlon for six years, having served as sales promotion manager for two years before joining the firm's sales force. He will conduct his new duties at Carlon's Southeastern Division Sales Office located at the company's Asheville, North Carolina plant.

Robert Pettit, Jr., has been with the company for one year. He is a graduate of Duke University and resides at 1728 Grandin Road, S.W., Roanoke, Va.

Gustin-Bacon — Mo.

J. T. Conlon has been elected president of **Gustin-Bacon Manufacturing Company,** Kansas City, Missouri, succeeding J. D. Simmons, who will continue with the company as a director and consultant.

Conlon joined Gustin-Bacon in 1937, in the company's sales department. An engineering graduate of Purdue University, he subsequently became chief engineer and vice president in charge of engineering. In April, 1958, he was elected executive vice president of the company.





LOOK FOR QUALITY

in your hot water generator...

look to FINNIGAN

Finnigan Hot Water Generators are engineered to give you large quantities of hot water for low operating cost. The finest materials, creative skill and quality construction assure efficiency in Finnigan equipment. These generators are fabricated from corrosive-resistant materials and contain copper removable-coil heating elements. Before leaving the plant, each generator must conform to ASME, API, U. S. Government and other specifications. "Fabricated by Finnigan" is your assurance of quality.
Finnigan builds hot water generators to your specifications. Call, wire or write today for complete information with no obligation to you.

TANKS, SMOKESTACKS, PIPING, WATER HEATERS, BREECHING, PLATE WORK.

J.J. FINNIGAN CO., INC

722 Marietta St., N.W. Atlanta, Georgia

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Houston 6, Texas, P. O. Box 6025
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Washington, D.C., 3714 14th St., N.W.
Kansas City 41, Mo., 1720 Harrison St.
Memphis, Tennessee, 5930 Laurie Lane
Jacksonville 4, Florida, P. O. Box 2527
Little Rock, Arkansas, 4108 C. Street
New Orleans 25, La., 4054 Thalia Ave.
New York 17, New York, 41 E. 42nd St.

Continental-Emsco — Dallas, Texas

Continental-Emsco Company, Dallas, Texas, has announced the appointment of **Jack R. Bechtold** as manager of Structural Sales with headquarters in Dallas.



Continental - Emsco's structural fabricating facilities are located at the Houston manufacturing plant. The plant recently was expanded to 336,505 square feet under roof. Nearly 100,000 square feet of the area under roof is devoted exclusively to structural work. Structural capacity is now several hundred thousand tons per month, and complete galvanizing facilities are also maintained in this plant.

Nat. Constructors Elects President

National Constructors Association has announced the election of **W. R. Wood** as president. Mr. Wood, who is president of Girdler Construction Division, Chemetron Corporation, Louisville, Ky., will serve during 1959.



National Constructors Association is an organization composed of national - operating engineering and building firms engaged in the design and construction of chemical plants, petroleum refineries, power plants, steel mills and other industrial facilities.

MOST COMPLETE LINE

Eleven Product Groups Serve Every Sealing Need

GROUP NO. 7

Sheet Packings



Forty-two styles of superior Sheet Packings are offered in the Belmont Line.

Unmatched variety of constructions—to suit every sheet packing requirement in service against steam, oil, solvents, corrosive chemicals and extremes of temperature—includes compressed asbestos, woven asbestos metallic, "Petrola" fibre, cork, red rubber, natural rubber, G.R.S., Neoprene, Buna-N, Silicone, Diaphragm sheet and Teflon.*

Cut gaskets are also available from all of these materials.

See your Belmont Distributor, or write for name of one nearest you.

OTHER BELMONT PRODUCT GROUPS

1. High Pressure Asbestos Packings
2. Valve Stem Packings
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4. Criss-Cross Braided Packings
5. Hydraulic Packings
6. Bel-Vee V-Rings
8. Gaskets
9. Metallic Packings
10. Plastic Packings
11. Expansion Joints

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Nationwide Industrial Distributor Organization Provides On-the-Spot Service

*du Pont Trademark

BELMONT

The Belmont Packing and Rubber Company
Butler & Sepviva Streets, Phila. 37, Pa.

With WHIRLEX Equipment . . .

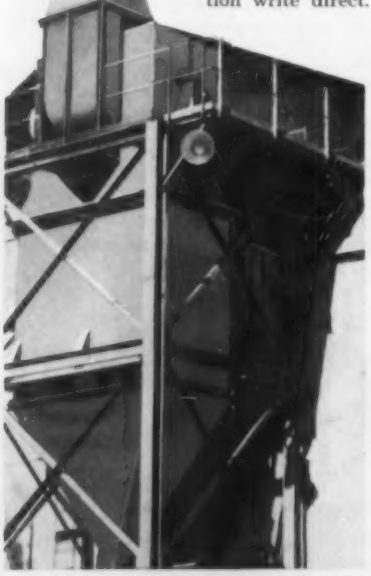
DUST Problems become CLEAN Profits

. . . for Major Southern Lumber Producer

The Whirlex system shown here complete with collector, ID fan, support structure, stack and fuel re-injection system was installed at M. W. Smith Lumber Co., Jackson, Alabama. The unit was used in conjunction with a VU-10 bark fired furnace.

The Result: High Boiler Efficiency, extra fuel savings, clean operation.

For detailed information write direct.



Fly Ash Arrestor Corp.
201 N. 1st Street
BIRMINGHAM, ALA.

WHIRLEX

Southern News Briefs (Continued)

I-T-E — South

The I-T-E Circuit Breaker Company, Philadelphia, has announced the appointment of **Walter S. Caldwell** to a newly created position of utility apparatus engineer for the company's southern sales region, functioning as a product specialist for utility customers.



Mr. Caldwell will be headquartered at the company's southern regional office, 1401 Peachtree Street, Atlanta, Ga. He will service the I-T-E ten-state southern sales region, including North and South Carolina, Georgia, Florida, Alabama, Arkansas, Mississippi, Tennessee, Texas and Louisiana. Initially, he will handle sales of indoor and outdoor transmission and distribution equipment manufactured by I-T-E's Greensburg Division.

American Society for Metals

Appointment of **Allan Ray Putnam** as managing director of the **American Society for Metals** has been announced by Dr. Clarence H. Lorig, president of the 30,000-member metals engineering society.



As managing director of the Metal Society, Mr. Putnam will occupy a new position established by the ASM Board of Trustees following the death last May of William H. Eisenman, a founder-member of the Society and its well-known national secretary and executive head for 40 years.

Mr. Putnam comes to the American Society for Metals from Detroit where he is assistant executive secretary of the American Society of Tool Engineers. He will assume his new ASM position in Cleveland as soon as his present commitments are concluded.

The Society is broadening its educational program and in midsummer will move into a new headquarters building, 23 miles east of downtown Cleveland which will house more than 100 staff members serving the 106 chapters of the Society.

The Society has future plans which call for an increase in output of reference and technical books covering all phases of the metals industry. Another important educational activity is the fast-growing home-study and in-plant training program of the Society's Metals Engineering Institute, now in its second year. A third "Metal Show," the Southwestern Metal Exposition, has taken its place with the Society's National Metal Show and its Western Metal Show.

Dresser Ind. — Dallas

Appointment of **John C. Helies** as General Manager for **Security Engineering Division**, one of the Dresser Industries, has been announced. Security Engineering Division is headquartered in Dallas, Tex. and is one of the principal manufacturers of rock bits and drilling tools to the world oil industry.



Keep boilers on the line with

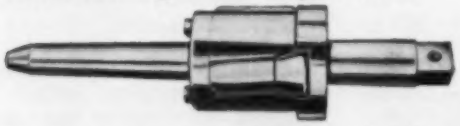
WILSON Maintenance Tools

Heavy-duty air driven tube cleaners



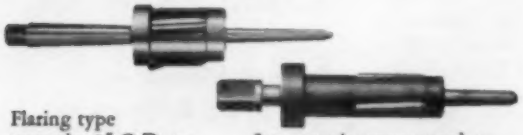
Designed to deliver maximum power at the most efficient cutter head speeds while negotiating sharp bends, the Model ECT Air Cleaners are excellent for cleaning curved boiler tubes from 2½" to 4½" O.D.

Self-feeding tube expanders



Wilson Model 38 tube expanders are self-feeding and parallel expanding. They are of the single flare roll type. Available for tubes 1" O.D. to 4½" O.D. with various roll lengths for tube seats ¾" and up.

Model E Expanders



Flaring type expander 1" O.D. to 4½" O.D. tubes, ½" to 2" tube seats

Long reach type expander 1" O.D. to 4½" O.D. tubes, 2½" to 5" tube seats

Right angle bevel gear drive



This Wilson bevel gear drive is expressly manufactured to meet continuous and heavy duty service conditions. The one piece all steel body is extremely rigid and not subject to distortion. The maintenance of perfect gear alignment is assured with consequent long service life.



Write today for your copies of Wilson Tube Cleaner catalog No. 77 and Wilson Tube Expander catalog No. 88.

Representatives in principal cities

Thomas C. Wilson, Inc. • 21-11 44th Ave., Long Island City 1, N. Y.

Cable address: "Tubeclean", New York

WILSON

TWB70

TUBE CLEANERS • TUBE EXPANDERS

Safer because it's Simpler

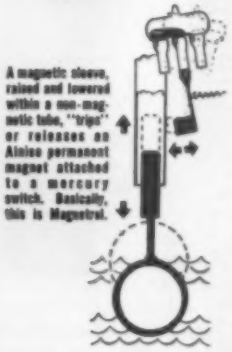


■ Of all boiler water level controls, we believe Magnetrol to be the safest. Certainly it is the simplest.

A PERMANENT Alnico magnet, located *outside* the float chamber, links boiler water level and electrical controls. This infallible magnetic link eliminates mechanical parts normally subject to wear and fatigue failure. *Pioneered and perfected by Magnetrol,* it provides almost unlimited operating life.

The brass "No-Scale" float chamber liner, another exclusive Magnetrol feature, is self-cleaning. It actually "flexes" off scale and prevents "sticking" of the float.

These are just two of *many* advances for greater boiler safety found *only* in Magnetrol. *Standard* Magnetrol units are available for temperatures up to 750°F., at pressures up to 600 psi, for single stage (low water cut-off) or multi-level stage (pump control *plus* low water cutoff and alarm) service with as many as three separate switching actions. Special units are available for more extreme requirements.



A magnetic sleeve, raised and lowered within a non-magnetic tube, "trips" or releases an Alnico permanent magnet attached to a mercury switch. Basically, this is Magnetrol.

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Southern News Briefs (Continued)





Disston Appointments

Edison M. Uhls has been appointed Southwest District Manager for the **Disston Division,** H. K. Porter Company, Inc. according to an announcement by Kermit L. Crow, General Sales Manager. He will be in charge of Disston's territory covering Texas, Oklahoma, Missouri, Kansas, Arkansas, Nebraska, Colorado and Southern Iowa.

Mr. Uhls came to Disston from the former Quaker Rubber Division of H. K. Porter Company, Inc., now part of Thermoid Division where he served as District Manager of the Southwestern territory, since 1952. He replaces Dietz Lusk, the former District Manager, who has resigned to go into business for himself.

Millan C. Shevchik has been appointed plant superintendent of the new **Disston Division** plant presently under construction in Danville, Virginia. Mr. Shevchik has had the position of Purchasing Agent at Disston since March, 1957.

Cleveland Forge Southwest

The appointment of **James S. Miller** as Southwest District Manager of the Cleveland Forge Works, Cleveland, Ohio, Forge and Fittings Division, **H. K. Porter Company, Inc.,** has been announced.



Miller will headquarter in Houston, Texas and service Cleveland Truck Body Hardware and Forging Accounts, in the states of Texas, Oklahoma, Arkansas and Louisiana.

Miller comes to the Cleveland Forge Works from the Dana Corporation where he was a Sales Representative of the General Drop Forge Corporation and Atlas Drop Forge Company, subsidiaries of the Dana Corporation. Prior to his association with the Dana Corporation he was employed by The Cameron Iron Works of Houston, Texas.

Edward Valves — Ga., S. C., & Fla.

Lee A. Colbath has been named district manager for Georgia, South Carolina and Florida by **Edward Valves, Inc.,** a subsidiary of Rockwell Manufacturing Company.

Mr. Colbath will be based at the Rockwell offices in Atlanta. He joined Edward Valves in 1953, completed the Edward factory training program and served as a valve sales engineer in the Chicago and Philadelphia areas before moving to Atlanta.



A. M. Byers Company PVC Plastics — Atlanta

Robert L. Berwick has been appointed PVC plastic sales engineer in **A. M. Byers Company's** Southeastern Division, with headquarters in Atlanta, Ga.



Previously with the Byers Company's steel sales department in Pittsburgh, Mr. Berwick was formerly employed by General Tire and Rubber Company in its manufacturing analysis and market research departments.

Byers' Atlanta office is located at 716-17 Mortgage Guarantee Building, Atlanta 3, Ga. J. A. Cain is Division Manager.

Mr. Cain said, "Polyvinyl chloride products are intended for use in extremely corrosive services, where use of metal is either unsatisfactory or quite costly. In the fast growing industrial South, we feel the potential for this rigid, unplasticized material is tremendous." Mr. Cain's appointment is aimed at developing the potential and increasing its applications.

In addition to marketing plastic pipe, sheet and rod stock, Byers is the world's largest producer of 4-D wrought iron products, and makes Amballoy electric furnace steel.

Delta-Star Appoints V. P. & Gen. Mgr.

Stanley C. Killian has been appointed Vice President and General Manager of the **Delta-Star Electric Division, H. K. Porter Company, Inc.**

Killian has served on the Delta-Star executive staff for six years, most recently as Vice President and Assistant General Manager, and previously as Chief Engineer. He joined Delta-Star in 1934 from a consulting engineering firm.

C. Stuart Beattle, who for the past eight years has operated Delta-Star, will continue to serve the Porter Division in a part time consulting capacity. He will have specific responsibilities of maintaining the Division's contacts with top management personnel in a number of important utility customer organizations and with such organizations as the American Institute of Electrical Engineers and National Electrical Manufacturers Association. Mr. Beattle will also take a vital part in important plans now under way for the growth and development of the Division.

Mr. Killian recently returned from an extended European trip as a member of a three-man delegation representing National Electrical Manufacturers Association at the 1958 International Electro-technical Congress in Stockholm, Sweden. While abroad he visited a number of important Delta-Star installations and electrical manufacturers in Paris, Norway, Belgium, Germany, Italy and Britain.

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Southern News Briefs (Continued)

Panellit — Mo. & Kans.

Panellit, Inc., Skokie, Illinois has appointed **Matney & Hanna Co.,** Kansas City, Mo. to handle Panellit's lines of industrial annunicators, control panels and information systems, including data loggers and scanners in western Missouri and most of Kansas.

Tenn. C & I — Alabama

Dudley Vaughan, general superintendent of the Fairfield Steel Works of **U. S. Steel's Tennessee Coal & Iron Div.,** has retired after more than 45 years of service.

A native of Birmingham, Mr. Vaughan began as a blueprint boy at the Ensley Steel Works and advanced through various clerical jobs to assistant foreman. By 1917 he had advanced to a department superintendency. In 1918 he became night superintendent of open hearths at Ensley, advanced to assistant open hearth superintendent at the Fairfield Steel Works in 1926 and moved to the superintendency 11 years later. He became assistant general superintendent in 1943.

In 1956 Mr. Vaughan returned to the Ensley plant as its general superintendent and a few months later was transferred back to Fairfield in the top position there.

Succeeding Mr. Vaughan is **George D. Brengelman,** formerly general superintendent of the Ensley Steel Works. Mr. Brengelman joined TCI in 1937 and became assistant general superintendent of the Ensley plant in 1952. Transferred to the Fairfield plant as division superintendent of mills in 1956, he was later promoted to assistant general superintendent. He returned to Ensley as general superintendent in 1957.

Haran W. Bullard, formerly assistant general superintendent at the Fairfield plant, succeeds Mr. Brengelman as general superintendent. Joining TCI in 1941, Mr. Bullard was called into the Army but returned in 1946 as draftsman for mill rolls. Subsequently, he advanced to the position of roll designer and superintendent of mills at Fairfield. After serving for a period as assistant to TCI's manager of manufacturing operations, he became assistant general superintendent of the Fairfield plant in 1958.

Replacing Mr. Bullard is **Eugene K. Graham,** previously assistant to the general superintendent at Fairfield. Having been with TCI before he was called into the Army, Mr. Graham returned in 1945 and became assistant to the general superintendent at Fairfield in 1948.

Dodge Mfg. — N. C.

New appointments in the field sales organization of **Dodge Manufacturing Corporation,** Mishawaka, Indiana, have been announced.

Paul Keb, sales representative in Charlotte, N. C., for the last 10 years, becomes district manager for North and South Carolina, succeeding **George Woolley,** of Charlotte, who retires after representing Dodge for 25 years in that territory.

Jack Stroobandt, of Mishawaka, will become sales representative in the same territory, assisting Keb. He has been with Dodge, manufacturer of power transmission machinery, since 1956.



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Lincoln Engrg. — South

Robert C. Doss has been appointed Division Manager of **Lincoln Engineering** with headquarters in Atlanta, Ga. His territory includes Mississippi, Tennessee, Alabama, Georgia, South Carolina, Virginia and the northwestern part of Florida.



Mr. Doss has been with Lincoln for four years, having been a territorial manager prior to his present appointment.

Replacing him in his previous territory is **C. James Zuius**, who will be Territory Supervisor in Georgia, South Carolina, and southeastern Tennessee. Mr. Zuius was formerly in the Detroit territory and in the service and sales department at the headquarters office in St. Louis.

Closed-Circuit TV at Kansas P & L

A closed-circuit television system that brings controls and visual checks into one central location is in operation at the Tecumseh Power Station of **The Kansas Power & Light Company.**

Furnished by General Electric, the system is used to monitor flame and water level gauges on three boilers of the midwestern utility's power generation system.

Both boilers and gauges are quite remote (nearly 300 feet) from the main control room. With the new system, periodic checks of these areas are no longer necessary. Operators in an air-conditioned control room can now look directly at the TV monitors and see that all burners are firing and that the proper water level is being maintained.

Cameras monitoring the boiler flames "look" through holes in the boilers. The camera's lenses are cooled by compressed air.

Southern Assoc. of Science & Industry

J. D. Wise, prominent Mississippi business executive, has been elected President of **The Southern Association of Science and Industry, Inc.**

Mr. Wise is immediate past president of the Mississippi Economic Council and recently was named by Governor Coleman as Vice Chairman of the new research agency created to study industrial opportunities in his state. He is a highly successful businessman, heading a bank, ceramic tile manufacturing plant, poultry processing operation, and automobile agency.

Named regional vice presidents of SASI were **William Windsor**, developer of the Brook Hollow industrial area in Dallas; and **Donald Crislip**, director of the West Virginia Industrial and Publicity Commission, in Charleston. **Chauncey Lever**, Vice President of The South Carolina National Bank, Greenville, S. C. was named Treasurer. **Dr. George D. Palmer**, University of Alabama chemist, was re-elected Secretary.

Parker-Hannifin — Southeast

Appointment of **J. F. "Jack" Ostergren** as district manager of distributor sales for the Southeast has been announced by Parker-Hannifin Corporation, Cleveland, Ohio.

Ostergren's district is comprised of Florida, Georgia, Alabama, Mississippi and the Memphis area of Tennessee. He will be handling Parker tube and hose fittings and fabricating equipment, hydraulic accumulators, check valves and manual lever control valves.

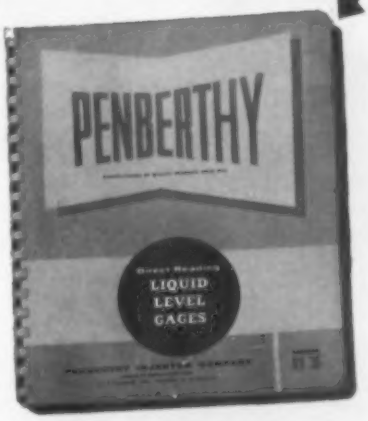
Mr. Ostergren plans to locate in Birmingham, Ala. as the center from which to cover his new territory.

Orr & Sembower Representative

Orr & Sembower, Inc., Reading, Pa., manufacturers of heat exchange and combustion equipment has announced the appointment of M. T. Gossett Co., Inc., Nashville, as its sales and service representative in Tennessee, northern Mississippi and northeastern Arkansas.

M. T. Gossett Co., Inc., handles a broad line of heating, air conditioning, refrigeration, electrical and general industrial equipment. They have a large showroom, warehouse and operating headquarters at 1205 Church St. in Nashville.

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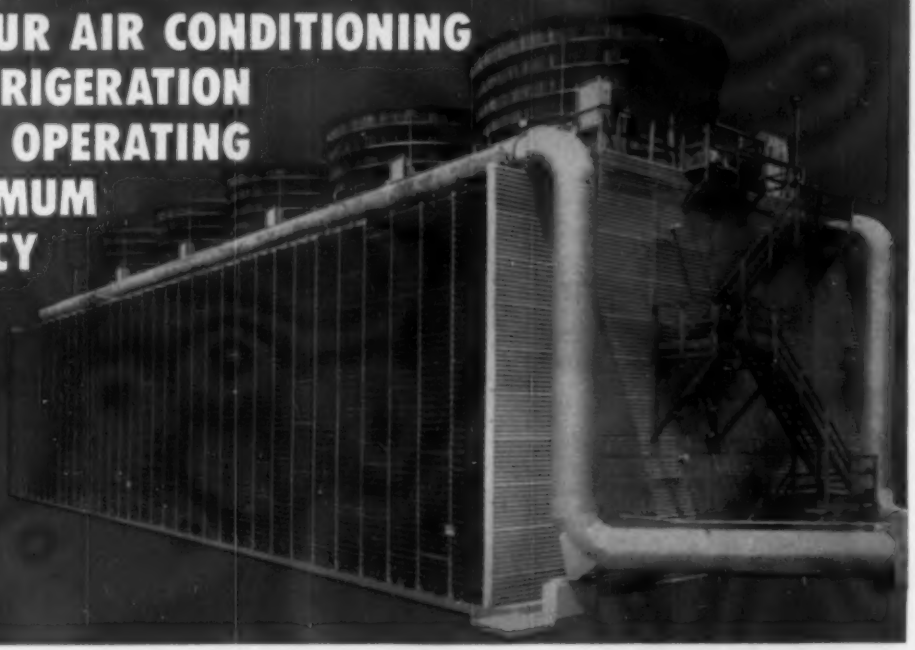
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